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ABSTRACT

This issue of UNICEF News explores the theme of connections between water and health in developing countries. The introductory article discusses prospects for improving health through water projects during the International Drinking Water Supply and Sanitation Decade (1981-90). Subsequent articles focus on (1) effects of a piped water supply on village life in Mozambique; (2) UNICEF help in providing water in Burma's Central Dry Zone; (3) social effects of piped water supply among Pakistani highland villagers; (4) effects of unclean water and poor sanitation on the health of children and women in the Third World and ways deficiencies are being remedied; (5) a UNICEF-assisted health information project in Imo State, Eastern Nigeria; (6) a handpump maintenance and preventive health training program for community leaders in Bokaga village, Cameroon; (7) traditional personal hygiene practices of women of the southern Sudan; (8) UNICEF assistance in restoring clean water to towns and villages in South Lebanon; (9) the need for health education to insure the best use of newly installed latrines among Tanzanian villagers; and (10) developmental education programs in schools. (RH)

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In Imo State in Eastern Nigeria a major UNICEF-assisted project is responding to the challenge of the Water Decade. This landmark project has been singled out for special attention in this UNICEF News Water Decade issue.

The design of the project has been elaborated with painstaking attention, to ensure that water



Editor: Maggie Black
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can mean health for hundreds of thousands of villagers. The unusual feature of the project is the extensive network of human resources being invested in health education, to change deepset attitudes about water use and excreta disposal.

MAGGIE BLACK went to the villages in Imo State to listen to people's reactions to the scheme. She found that, in the words of a local chief: "The name of UNICEF is now indelible." But whether the changed attitudes about water and sanitation are as indelible will take longer to discover. *page 13*

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Can water mean health?

The International Drinking Water Supply and Sanitation Decade for the years 1981-1990 was the outcome of the United Nations Water Conference, held in Mar del Plata, Argentina, in March 1977. The purpose of the Decade was to respond to the crying need for a concerted international water and sanitation effort, and the goal of the Decade was to be: "safe drinking water and sanitation for all by the year 1990".

The statistics of need among those who live in the poorer parts of the rural and urban Third World have been rehearsed again and again in the years since the delegates to Mar del Plata passed their Water Decade resolution. Over half the people in the Third World have no access to safe water, and three out of four have no better facilities for excreta disposal than a disgusting bucket, or a walk in the fields. The effect of this massive insanitariness on their health, and particularly on the health of their children, is almost incalculable. But efforts have been made to quantify it: WHO estimates that between 10 and 25 million deaths each year, and 80 per cent of all the world's sickness, are attributable to inadequate water or sanitation.

In the developing countries, half the deaths occur among children under five-years-old. Among the infections responsible for this high infant and young child death rate, diarrhoeal diseases—almost invariably caused by a combination of poor drinking water and insanitary living conditions—top the list. Diarrhoea is thought to kill around five million children every year, and in a fatal combination with malnutrition, contributes to the death of many millions more. Skin and eye diseases, known as "water-washed" as opposed to "water-borne", cause countless millions of children constant discomfort and if left untreated, can lead to disability. Parasites—worms of all descriptions, including the noxious

guinea worm which plagues the people of Ohaozara (see the case study which begins on page 13)—find their way into the stomachs and intestines of more than half the Third World's children, depleting their energy, their health, and their growth.

Calculating the costs of meeting the Water Decade goal is another mathematical exercise in mind-numbing variables. The World Bank estimates that extending water services can cost from US\$1 to US\$300 per head, depending on whether the water source to be tapped is near or far away, deep in the ground under layers of rock, or just a few feet below the surface. It also depends on whether a

"The goal of the UN Water Decade was to be: safe drinking water and sanitation for all by the year 1990"

tap is to be installed in every home, or a community handpump to serve 5,000 people. According to the World Bank calculations, the total investment required to meet the Water Decade target could run up to US\$600 billion. UNICEF, one of the leading proponents of low-cost and appropriate water and excreta disposal technologies, cuts this figure by half, to US\$300 billion. But either figure demands an astronomical input of billions more dollars a year than could ever be generated.

Is the goal realistic? The question is rhetorical. But cruel economic reality should not be allowed to detract from the

sincere efforts of many countries and organizations to respond to the challenge of the Water Decade. The Imo State Water and Sanitation project in eastern Nigeria, the special focus of this issue of *Unicef News*, represents one such response.

During 1982, UNICEF's assistance to water supply and sanitation programmes amounted to US\$60.1 million, more than three times the amount contributed five years ago. For the first time, assistance to water and sanitation overtook the amount devoted to health. UNICEF's contribution is but a small proportion in financial terms of the total assistance given annually by the international community to water supply schemes, but it has a very special quality. The emphasis of UNICEF's assistance is not on construction of major dams and reservoirs, designed to provide water to large urban populations. The programmes in which UNICEF is involved are exclusively geared to meeting the needs of poor rural and urban communities, whose economic clout is too negligible to command a share of water supply capital resources from a return-on-investment point of view.

UNICEF has traditionally justified its commitment to water supply and sanitation programmes on the grounds of their effects on children's and 'mothers' health. And indeed, a plentiful supply of clean water and a hygienic environment is a precondition of healthy living. But over the years, experience showed that the health advantages so evident to the public health experts and the analysts of declining mortality rates in the industrialized world, do not necessarily follow hard on the heels of the inauguration of a new borehole and handpump in, say, a Sudanese village.

To begin with, the experts focussed on their technical failures. A new water supply system which broke down, and



which was outside the reach of regular maintenance and repair facilities, quickly lost its appeal to villagers forced to rely on the streams and other polluted sources to which they were accustomed. The realization that no low-cost handpump existed in India that could withstand constant use by a village community without soon collapsing into disrepair inspired UNICEF's development of the India Mark II. This handpump is now exported to many other countries for use in village water supply projects, and its record of sturdiness has earned it respect from the engineering profession.

It was in India, too, in the southern state of Tamil Nadu, that UNICEF first experimented with a handpump maintenance system that depended on village caretakers selected by the community, and given a brief training, a couple of spanners, and a can of grease. This idea has also been exported, and today in Cameroon, village handpump caretakers are receiving training along much the same lines (see page 25).

But maintenance and sound engineering are by no means the end of the story. The key to turning water into health, as is increasingly echoed down the years of Water Decade, is now recognized to be the understanding by the users of a new water supply that it has a potential for reducing sickness in the family. Of course, no-one in the world wants to drink water that is dirty and foul-smelling, and most people instinctively appreciate the risk of ill-health that doing so carries. But germs and worms too tiny to be seen are not self-evidently harmful to people who prefer the taste of the water they have always drunk, or consider its cooler temperature health-giving.

If habits to do with collecting, storing, and using water are deeply ingrained and not easily altered by the "health education messages" which are these days regarded as mandatory components of water projects, habits concerning excreta disposal are even harder to influence.

People in almost every society are intensely private about the way in which they dispose of their bodily wastes, and address the subject—if at all—in euphemism and distaste. Not surprisingly, people whose task in life is to handle excreta are not accorded the highest of status in any society: in the Indian sub-continent they used to be regarded as "untouchable". To those used to the fresh

air of field and furrow, the pit latrine which entraps dirt and contamination beneath the house, and noxious smells within its own confined space, seems an improvement of dubious merit. Even a simple health precaution like covering your own waste with a shovelful of earth will not command much support unless the connection between its exposure and disease can be graphically brought home. "I informed the villagers of the 'cat system' of excreta disposal," said a village-based worker in Imo State, "but they did not welcome it, they did not welcome it at all" (see page 20).

If the potential for improved family health, even when fully explained in health education messages, is not quickly seized upon by village mothers, why is it that water supply programmes are so keenly wanted—which they unquestionably are? The reason is mainly convenience. Water-carrying is the almost

"Germs and worms too tiny to be seen are not self-evidently harmful to people who prefer the water they have always drunk."

exclusive preserve of women in most Third World societies, and the drudgery entailed in fetching a heavy bucketful, or gourdful, or potful from many miles away, and carrying it home on an aching back or neck, begins almost as early in life as a small girl can walk. As the dry season progresses, the source becomes increasingly distant, the water more brackish and dirty, the walk hotter, and the effort more painful. Not surprisingly, the most marked effect of many water supply programmes has been the release of women's time and energy to devote to other domestic tasks. If these consist of growing vegetables and spending time on the children, they may have more impact overall than the direct health effects of the water itself (see the Mueda Plateau water supply project in Mozambique on page 5).

In immediate results, the most fre-

quently reported health gain from providing a village with a new water supply is a decline in skin disease and eye infections. A drop in diarrhoeal disease does not occur so perceptibly, and villagers often seem unsure whether their children's health, or the number of times they have diarrhoea, has altered in any way since the pump or the standpipe was installed. But even if it is hard to show the dramatic effect on children's health that provided the original justification for the new water supply, the effect on the quality of life for everyone in the village and particularly for the women, is invariably dramatic and provides its own justification. If the full range of health gains takes a little longer to bring about, at least one essential pre-condition is now in place. And the community effort inspired by the need to dig trenches for pipeline, or send members of the community for training, may have laid groundwork for other types of community endeavour, as is demonstrated by many articles in these pages.

This issue of *Unicef News* concentrates on a particular water supply and sanitation project inspired by the Decade for a very good reason. The project in Nigeria's Imo State has set out in a more ambitious way than usual to *make* water mean health. It has used sorely needed water supplies as a point of leverage to set in train community endeavour, and to begin to alter deepset attitudes about water use and excreta disposal. It is tempting to believe that if this project cannot provide an answer to the question: "Can water mean health?" in the short and scientific term, then the question has no answer. At the end of the line, we might find that we are asking the wrong question.

Perhaps the question begs another, broader question: what, actually, is "health"? To whom, it is: "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." To the village chief in Imo State, it is release from "the menace of cholera and guinea worm." To a mother in the village it might be: "enough food for the children to eat, plentiful rainfall for a good harvest, a shorter distance to walk to the well." The community as a whole might sing: "Health is wealth." Looked at from this perspective, the answer to the question: "Can water mean health?" must be a resounding "yes." □

Mozambique

Water comes to the “place of wasps”

In Namaua Village, the “place of wasps,” up on Mueda plateau of northern Mozambique, a new piped water supply has made a dramatic difference to village women’s lives. There are health benefits, but the chief saving is of women’s time. By JOSEPH HANLON.

Selina Arafel lives in a village called Itanda on the Mueda plateau in northern Mozambique. She rarely washes herself or her children. Cristina Nculungua, however, who lives only 20 kilometres away in the village of Namaua, washes herself and her children thoroughly every day. The reason is obvious. It takes Selina five and a half hours to fetch the same bucket of water that Cristina takes 15 minutes to collect from the standpipe in her village. Namaua village has had water since May 1981, but the system has not yet reached Itanda.

The two villages show just how much difference water can make. Selina goes for water two days out of three, which is just enough to provide the five people in her family with a minimum four litres of water each a day. Cristina goes for water at least twice a day, meaning that the five people in her family each use 11 litres of water a day.

The higher part of Mueda plateau, just south of the Tanzanian border, is home for 90,000 people. The plateau is fertile and, lying at an elevation of 1,000 metres, has a comparatively healthy climate. Unfortunately it is lacking in natural water sources. Even the names of Selina’s and Cristina’s villages emphasize the preoccupation of local people with their water problems: *itanda* means “marsh,” and *namaua* means “place of wasps,” after the insects that swarmed around the old water-hole.

Traditionally women have had to fetch their water by walking 10 kilometres or more to the plateau’s edge, continuing down the escarpment on winding trails to springs

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far below, and struggling up again before the long walk home. It is not a trip you make every day, and every drop of water is precious.

Mueda is one of the fonts of Mozambican nationalism: Frelimo’s successful liberation war against the Portuguese began not far from here. And it is not surprising that water has always been a political issue. Faced with rising dissent in the late 1950s, the colonizers began talking of a water supply system for the “indigenous” people.

A water system did open eventually in the 1960s, with many features in common with systems the Portuguese built elsewhere in Mozambique. It was assumed that white people would use 100 litres of water a day (they took more baths, it was said) and blacks only five; and only white people had



Women line up at a water point. It can take up to five and a half hours to fill a bucket. ICEF 9871/Hanlon

water connected directly to their houses. But the Mueda system had one unique feature: instead of standpipes providing free water, there were slot vending machines for the



"indigenous." Villagers bought tokens. Each released 18 litres of water. But few could afford them. After another two years, the liberation war began; most people followed Frelimo off the plateau and out of Portuguese control. And they destroyed the water vending machines as they left.

After independence, people returned to the top of the plateau. Water was still clearly their strongest felt need. Because the people there had suffered longest during the liberation war, Frelimo set out to provide water after independence in 1975. Deep wells seemed out of the question, so the only choice was to capture springs on the side of the plateau, pump the water up to the top, and then run pipes through the bush to the various villages.

The project proved much more difficult and expensive than expected. Villagers raised questions about the slow progress when President Machel visited the plateau in 1976 and 1978. UNICEF stepped in with increasing engineering and financial help, and is now paying half the \$3.5 million cost.

As simple as possible

Four different systems are involved, bringing water to 35 villages in different parts of the plateau. They involve 150 kilometres of pipe and seven pumping stations. The systems have been kept as simple as possible. Water purity is maintained through covered intakes and a ban on farming in areas immediately above the intakes. Pumps are driven by easily maintained Lister diesel engines. Valves and other accessories are boxed in, to keep them accessible to maintenance staff but inaccessible to the public. Five years' requirement of spares have been imported. A rigid preventive maintenance schedule has been developed. Each item, down to individual valves, has a data card on which to record routine checks and faults. Three specially trained technicians will take over the operation and maintenance of the systems.

The testing in March 1981 of one of the four systems, the "Mutamba system," showed how great is the demand for water. All pipe is buried, but the joints were left temporarily uncovered to test for leaks. In several villages, when women saw leaks, they scooped enough mud from under the joint to place a pan and collect the drips. When a leak was fixed near the village of Chiduadua, where women walk seven hours to obtain water, the people were so angry that they drilled a hole in the pipe. That, too, was fixed and eventually water flowed to the Chiduadua standpipe.

Not everyone on the plateau is yet directly served by a water pipe. N'Toli is the last village on the Mutamba system, and its single standpipe was intended to serve only that village. But it now has permanent queues of hundreds of women from surrounding villages; some women come for



Women used to fetch water by walking 10 kilometres to the plateau's edge and continuing down the escarpment on winding trails. ICEF 9372/Hanlon

water in the middle of the night because the queues are shorter then.

When water came to N'Toli in April 1981, Selina Arafel started going there instead of to the old water hole. Because of the long queues, it still takes the same five and a half

hours to get a bucket of water. But the walk is shorter, and the water is clean instead of muddy. Perhaps most important, there are no lions—a hidden benefit. In the previous year two women were killed by lions at the old water hole.

Saving women's time

Just as the demand for water on the plateau is clear, so are some of the immediate benefits. By far the most important is the saving of women's time. A comparative study of Itanda and Namaua villages revealed that in Namaua, women spent a daily average of two hours less to fetch water. The women use the time to relax, and work on average 45 minutes a day less than women in Itanda. The rest of the time saved goes into household tasks: preparing food, cleaning, and feeding and washing children. These are clearly combined with increased water availability, as more water is used for all these tasks.

The most dramatic difference is in washing children. The average woman in Namaua uses five litres per day to wash her small children, while the average woman in Itanda uses five litres *per month* for the same task. The effect is equally dramatic: in Itanda about one child in 12 has heavily inflamed eyes, from infections probably caused by lack of washing. In Namaua no child has inflamed eyes.

There are several less visibly obvious gains. Villagers say that the women's organizations are more active because women have more time for meetings. It seems that in villages with water, women are growing more nutritionally significant crops like groundnuts for which they had no time before. And it appears that baby feeding has improved: previously babies still on the breast but too heavy to carry to the water hole, had to be left many hours without food.

Basic health and nutritional knowledge on the plateau seems good. This may reflect the fact that many of the people in Mueda were with the Frelimo guerrillas or in refugee camps in Tanzania, where they learned the basics of preventive health. These lessons have been reinforced by the new village health workers. Most houses—Cristina's for example—have latrines. Hers was built by her husband Vicente, who learned to use a latrine in the guerrilla army and says that it reduces diseases. And people do make good use of whatever water is available. During the rainy season, they capture run-off from roofs, and during heavy storms they bathe in the rain.



What comes next?

On the other hand, the 11 litres per person per day that is used in Namaua is less than the 15 litres common in other parts of the world in villages with standpipes. (The Mueda systems are designed to provide 20 litres or more per person per day if there is sufficient demand.) The local doctor, Manuel Julien, reports that serious cases of tropical ulcer, resulting from infected cuts, and of diarrhoea and eye infections requiring hospitalization, have not declined. These can all be reduced through proper use of water for improved cleanliness, yet the coming of water has not yet brought this about. Nevertheless, as the comparison of Itanda and Namaua showed, water has caused a visible drop in less serious eye infections.

What is already apparent, however, is that there is no need for a traditional broad "health education" campaign. Clearly, education might help in some areas, but perhaps not in the expected way. For example, it might help to teach people to use water to keep cuts and wounds clean, reversing traditional practices established over many years with little water. But the difficulty is probably lack of soap rather than lack of knowledge. There are *mafurra* trees on the plateau, and in the south of Mazanti people use their fruit to make soap. Perhaps the most useful next step would be to introduce this technique in Mueda.

A second standpipe at N'Toli would save countless women hours. Small maize mills would also save significant time, as most women spend one and a half hours a day pounding grain.

Studies are still going on to determine the full impact of the water supply system on health. A conference, bringing together health and water specialists, is soon to be held on the plateau. But it already seems clear that there is no need for a major health education programme about the uses of water and the value of clean water. The women already understand its virtues, even if they have not yet fully changed all their health habits, built up over generations when water was scarce.

It seems that the biggest health gains have come from the savings in women's time, and this may guide the next course of development plans for Mueda. Many questions need answers, and they cannot all be supplied by the specialists. Just as the people joined in the struggle for their freedom, and for their water supply, they will join in the plans about what to do next. □

Burma

Putting the umbrella on the pagoda

In a village in the Central Dry Zone of Burma, a notice reads: "We need water, not gold." With help from Failing Rig #004DR – and UNICEF – that need is being met. And there are clear signs of improvement in children's health. By SAMPHE LHALUNGPA.

On the outskirts of Thakeytan, a village in the Central Dry Zone of Burma, a steel mast shoots out from the canopy of treetops like a metal giraffe's neck. From the cluster of huts in the shade of the trees, strains of Burmese music merge with the thumping bass of heavy machinery. And there, in the tracks by the edge of some cotton fields, is a large blue and white diesel truck raised on stumpy hydraulic hoists. Failing Rig #004DR is at work.

On the truck's flatbed an array of pumps, compressors and hoists seem to be going at the same time: men in mud-stained blue overalls handle the various parts of the rig with a nonchalance born of long practice. From the rear of the truck the mast rises with a length of pipe in its hoists. Standing on a platform at its base, a young driller pulls on a lever and positions the pipe over a spinning collar. With another's help he threads the pipe to the one already in the collar and another 20-foot link has been added to the 550 feet already drilled.

The men then position the kelly – a 20-foot long pipe with two metal catches that fit neatly into the two grooves in the collar – and lower it until the catches fit the groove. This time there is an audible change in the pitch of the 240 h.p. diesel as it braces to hold up the thousands of pounds of pull exerted by the tool string: the drill bit, heavy drill collar and the hundreds of feet of pipe below. Five hundred and fifty feet underground, a three-head bit looking like three medieval maces welded together, is gouging out the clay in search of an underground treasure: water.

Thakeytan, a village of some 900 people, has waited three years for the drilling rig.

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Village Council Chairman U Tin Pe, a stocky middle-aged man, voices the people's elation over the assured water supply and its benefits for the health and economy of the village.

Situated in the heartland of Burma, the Central Dry Zone is a vast rain shadow area that receives less than 40 inches of rain per year. From the air the landscape is speckled by a stubble of dry bush that dots the low-lying country. The white sands of dry river beds mark the path of the monsoon flash floods. Feeder streams etch their way through the fissured landscape like crows feet around ageing eyes.

People learn to cope with the fine silt-like dust that penetrates everywhere: neither man nor machine is immune from clogging. There is a fierce beauty to this land, the hard dazzling light highlights little white-washed *stupas* – Buddhist shrines – against the red earth. And yet, dry bush and grit are not the only features of the landscape. Green paddy-fields bear witness to what can be done when water is available. Water is the key to life, and this is reflected in a sign in another Dry Zone village that reads: "We need water, not gold."

It is to address this vital need that UNICEF in co-operation with the Australian Development Assistance Bureau (ADAB) has been assisting the Rural Water Supply Division's (RWSD) water supply project in the Dry Zone. Since 1978, some 1,800 tubewells have been drilled in the three Divisions of Magwe, Mandalay and Sagaing. The project aims to complete 3,200 wells in 1982-86 at a cost to UNICEF of \$6.4 million. Failing Rig #004DR is one of twelve of its type supplied to RWSD by UNICEF, in addition to support vehicles, spare parts and drilling supplies.



There are now two UNICEF drilling experts based in the Dry Zone who work closely with the RWSO and advise on the best use and deployment of the equipment and training of staff.

No sore eyes

An assured and clean water supply can have a dramatic impact on the health of village children. This is nowhere better illustrated than in Kyunbodin village in Sagaing Division. Situated in dry bush country

The village notice reads: "We need water not gold." Since the water came, diarrhoea and worm infestation among children have dropped. ICEF 9373/Lhalungpa

this village of 300 people depended on ponds and spring water—at best a seasonal supply of dubious quality. However, since December 1980 the village has been served with a tubewell and today children jostle one another at the school tap. There is little evidence of trachoma or the other eye diseases that plague children in other Dry Zone villages without access to a clean supply of water.

The township's energetic Health Officer explains that the village was also able to benefit from a UNICEF-assisted pilot project to install improved sanitary pit latrines in the village. The combination, he says, caused a significant drop in the incidence of gastro-intestinal diseases in children.

A before-and-after survey also revealed a dramatic drop in the level of worm infestation among the children.

Besides health improvements, water can also improve the village economy. Eight miles from Kyunbodin, the people of Wayaung village find that their new supply of tubewell water helps them to process the bark of the ubiquitous *thanaka* tree into cakes of the national cosmetic, called *thanaka*. Dissolved in water, the light yellow cream is used by women and children throughout Burma for skin care and wrinkle-free beauty.

Using a stationary tractor to run the grinders, the producer's co-op hires 25 people and uses 700 gallons of water per day to make 3000 cakes of *thanaka*. The *thanaka* twigs are cut into six-inch lengths, ground to a paste, and refined and sun-dried into cakes.

The villages contribute

Communities that receive tubewells are selected on the basis of a variety of factors, including the nature and volume of the present water supply, the population to be served, the economic condition of the village, as well as geological data. While the tubewell is provided free of cost to the villagers, they must run and maintain the pump, and provide all labour and costs for the construction of the storage tank and pump house. It is not unusual for a village willingly to spend 28,000 *kyats* on these structures. Chairman U Tin Pe of Thakeytan explains that each family pays what they can afford. Well-to-do donors are willing to meet additional expenses, he says, because they feel giving water is as meritorious an act as putting an umbrella on a pagoda—regarded in Burma as one of the crowning acts of Buddhist piety.

While the Dry Zone has attracted the largest volume of UNICEF assistance in water supply activities, other areas of Burma have not been overlooked. UNICEF is becoming involved in gravity flow systems in the hilly regions; rehabilitation in lower Burma; and a country-wide environmental sanitation project.

Meanwhile, back in Thakeytan village, the big diesel throbs steadily and a stream of villagers carry water—used for mixing the drilling mud—from the old shallow well half a mile away to the site. And from two large metal horns that look like giant ear trumpets suspended high in the trees, amplified Burmese music washes over the surrounding countryside to proclaim Thakeytan's happiness. □



Why should we share our water?

The villagers in highland Azad Kashmir feel proprietary about the springs and water sources they use. At first, they reacted with hostility to new piped water systems which meant sharing their water with others. Fatima, in Khohi Rata village, set an example of sharing, by having her tap installed outside her compound. By NESEEM UR REHMAN.

The green mountain valleys of Azad Kashmir studded with tall pine trees seem an unlikely setting for a water shortage. Ostensibly there are no signs of water scarcity in many remote and idyllic hamlets. But it is not unusual for a woman to walk miles with a pitcher precariously balanced on her head to fill it from seasonal streams and springs. It is by far the major single chore for rural women, the unrivalled water carriers, and claims a good part of their time and energy.

Khohi Rata village in the Kotli district of Azad Kashmir was a village faced until recently with a severe water problem. Tradition has it that the very name of the village owes its origin to the constant quarrels which erupted from overcrowding at the two wells. The water in the well was always scarce and women used to jostle for a turn. Khohi Rata in the local language literally means: "quarrels around the well".

The summer months were always dreaded. The water dried up in the wells and springs and women had to set off elsewhere on mountain trails to get water. For years, the 4,000 people of Khohi Rata braved the difficulties quietly.

For the menfolk drinking water was a problem beyond resolve, a part of life which had to be accepted. Women faced the brunt. By virtue of their roles in a male-dominated society, the men are rarely directly affected by the range of everyday domestic problems which engulf rural life: it is a woman's lot to face the facts. Men talk about problems lightly, and the women are left to toil.

Fatima, one of the village women of Khohi

Rata, felt strongly the drudgery of fetching water. Over the years the first thing in the morning for her was to walk over two miles to fill a pitcher. She recounts the ill effects of spending so much at this essential household task, and the list is endless. Her small children were often left unattended. Her two school-going children were the worst sufferers. She could hardly get back in time to give them breakfast. They had to be rushed to school, improperly dressed, unwashed and sometimes without a meal.

When the people of Khohi Rata brought up

Women bear the brunt of all domestic problems. Water for cooking is fetched from far away and stored in pots in the courtyard. ICEF 9374/Rehman

water as one of their top felt needs to the Local Government and Rural Development Department (LGRDD), the prospects of a piped supply scheme seemed far-fetched. Water-supply schemes tend to stay on papers for years before seeing the light of the day, in spite of the fact that the government accords a high priority to drinking water.

The LGRDD of Azad Kashmir have recently begun to utilize a resource previously untapped for water supply schemes: the people themselves. Around 250 water schemes with a strong element of community participation in planning, construction and maintenance have been completed.

The LGRDD wanted a solid commitment from the community for their share, if not in cash, then in kind. The community leaders pledged to provide labour and even maintenance of the scheme after completion. Haji Muhammad Zaman, the village water-supply committee's Vice-President has all the details of the initial efforts at his fingertips. "We were excited but not very hopeful. We were conscious of the financial limitations of

continued on page 12



Naseem ur Rehman is an Information Officer in UNICEF's Islamabad office.

Water and health: the facts

Water, sanitation and sickness

WHO estimates that 80 per cent of all disease in the world is attributable to inadequate water or sanitation. This includes the effects of drinking contaminated water, water acting as a breeding ground for the carriers of disease, and disease caused by lack of washing.

Waterborne diseases

Spread by: drinking water contaminated by faeces, consuming food washed in contaminated water, washing hands, face, or utensils in contaminated water.

Examples: typhoid, cholera, dysentery, gastro-enteritis (diarrhoea), infectious hepatitis.

Action: improve water quality; prevent use of impure water sources; boil drinking water.

- 6 million children under five die from diarrhoea every year

- 100 million people suffer from diarrhoea at any one time



Water-washed diseases

- 500 million people suffer from trachoma ICEF 2674



Spread by: inadequate water, or impure water, used for personal hygiene.

Examples: skin diseases: scabies, leprosy, yaws; eye diseases: trachoma, conjunctivitis.

Action: improve water quantity, accessibility, and improve hygiene.

- skin diseases effect millions more ICEF 6884



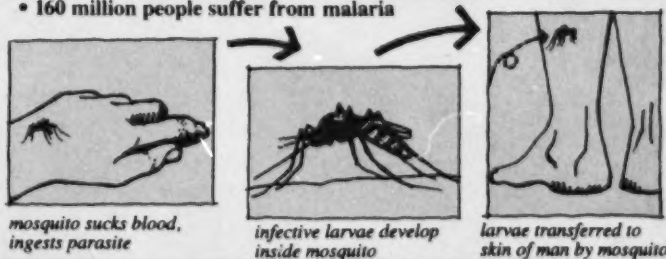
Water-insect-related

- 160 million people suffer from malaria

Spread by: insects that breed in water or bite near it.

Examples: sleeping sickness (tsetse fly), malaria and yellow fever (mosquito), river blindness (blackfly).

Action: improve surface water management, destroy insect breeding sites.



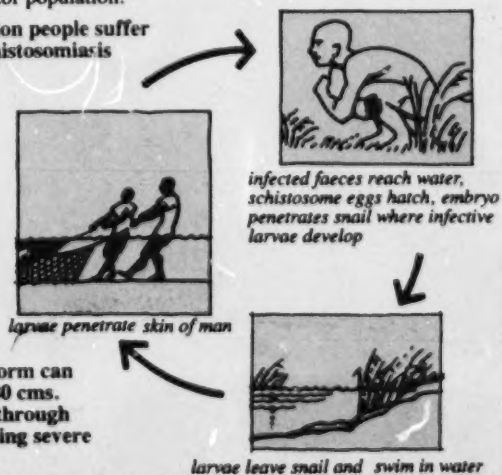
Water-based diseases

Spread by: invertebrate organism living in water which acts as the vector (carrier).

Examples: schistosomiasis (bilharzia), transmitted by snails; guinea worm, transmitted by a microscopic waterflea.

Action: decrease need for water contact; improve water quality; control vector population.

- 200 million people suffer from schistosomiasis



- guinea worm can grow to 80 cms. emerges through skin causing severe pain

Diseases from poor sanitation

Spread by: infectious agents in human excreta which lodge in soil, or are washed into water source; can be transmitted by consuming polluted water or food or by body contact.

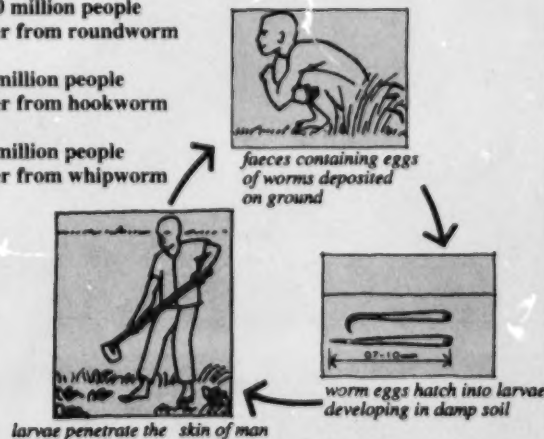
Examples: hookworm, roundworm, whipworm.

Action: improve excreta disposal.

- 1,000 million people suffer from roundworm

- 800 million people suffer from hookworm

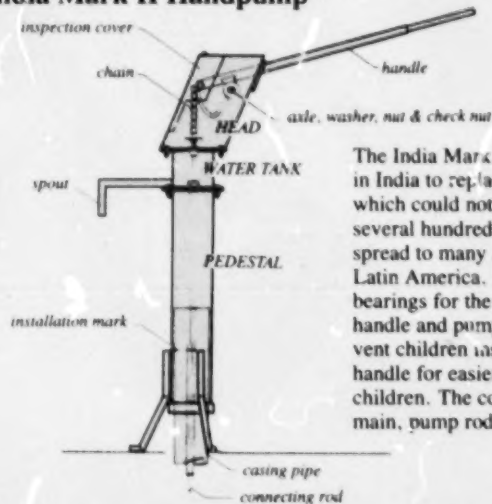
- 500 million people suffer from whipworm



Appropriate water and sanitation technologies

Providing a clean water supply creates the pre-condition in which health can improve. The type of technology used for water and sanitation projects is not the crucial determinant in their success. But it has an important part to play in ensuring water purity, easy maintenance, social acceptance, and keeping costs low while spreading services widely.

The India Mark II Handpump

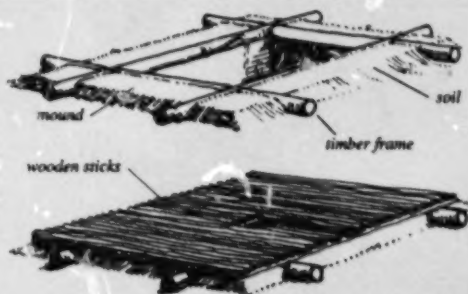


The India Mark II handpump was developed in India to replace the old cast-iron pumps which could not withstand daily use by several hundred villagers. Its use has now spread to many African countries and parts of Latin America. Design details include: ball-bearings for the handle; chain links between handle and pump rods; angled spout to prevent children inserting objects; weighted steel handle for easier handling by women and children. The cost of the pump with rising main, pump rods, cylinder: \$270.

Source: UNICEF India

The traditional pit latrine

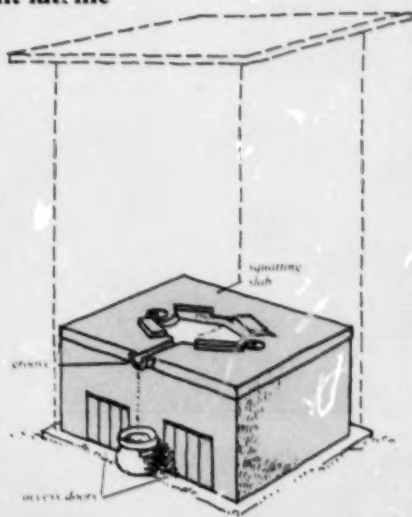
Used in many parts of the world, the simplest pit latrine consists of a hand-dug pit approx. 3-4 m. deep. The input is excreta plus cleaning agent: water, or compostable waste such as leaves, grass etc. Usually the simple pit latrine is a health hazard: the water table may be too high to avoid contamination of ground water, the pit provides a breeding ground for flies and mosquitoes, and the squat area a breeding ground for hookworm.



Source: Sanitation without Water, SIDA

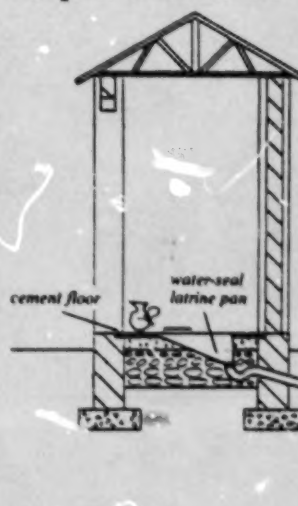
The double vault latrine

This latrine is suited to areas with high density population engaged in farming; and where the water table is high so that a regular pit latrine pollutes the ground water. In the double vault latrine, two cement-lined vaults are used alternately, and the one not in use is sealed off to create anaerobic conditions in which the waste matter is converted into harmless fertilizer. Cost: \$100-\$200 depending on materials used.



Source: Sanitation without Water, SIDA

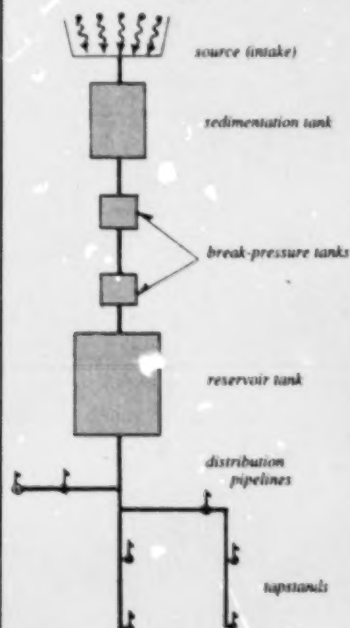
The pour-flush latrine



This latrine/toilet requires only 1-2 litres of water to flush compared to 20-25 litres in a standard wc. The waste is washed through a water-seal pan made of plastic. The pans are light, easy to transport, and cost around \$8 each. The total costs depend on the choice of materials used to construct shelter and pit-lining, probably \$150-\$250.

Source: World Bank

Gravity-flow piped system



Gravity is used to move water downhill from a source at a higher elevation than the village. Water is collected at an intake (tank, reservoir), which is fed through buried high-density polyethylene pipeline to a reservoir above village and fed to tapstands at convenient locations. Tanks may also be needed to break water pressure en route, and a sedimentation tank for purification.

Source: UNICEF Nepal (Handbook of gravity-flow water systems)

continued from page 9

our government and ourselves but decided to give it a try."

The provision of 18,000 feet of pipe from UNICEF turned the villagers' dream into reality. In early 1979, the LGRDD started a survey and a perennial spring in Kargi village two kilometres away was selected for feeding the system.

Why should we share our water?

But the first reaction of the Karji village towards sharing their water was unfavourable. The village elders protested strongly. "The spring is located on our land, and we cannot share it with another village on a permanent basis. We use this water for drinking and raising our crops. We do not want a shortage here simply to meet the needs of another village."

The officials tried to lay their worries to rest. "It is a copious source and will not affect your needs if you share it," they said. "But how can you talk about a piped water supply for a far-away village when we don't have one in our own village?" the villagers retorted. This point was well taken by the officials, who adapted their plans accordingly. Work started on *both* schemes simultaneously.

The Khoji Rata villagers dug an 18,000 foot trenchline through mountainous terrain to bring the water from the source. Villagers normally very sensitive about every inch of their land happily let the pipeline pass through their fields. Then the question of land for a tank at a suitable high point posed a problem. The village committee started raising funds to buy a chunk of land: it seemed unfair to coerce a farmer of a small holding to donate land. But when they asked the owner of the land to contribute his share towards its purchase, he surprised them by donating the land instead.

The villagers, by now cemented into an active community, witnessed the minor miracle of safe piped water functioning effectively in December 1979. In line with its strategy of encouraging village self-reliance, the officials handed over the scheme to the village committee.

The five-man committee elected by the village manages the water supply system with enviable efficiency. It has three paid employees: a full-time secretary in charge of water supply; a pipe fitter, and a guard.

A tap in the home

Within a fortnight of commissioning, 200 house connections had been made. Each

household with a home connection pays Rs. 10 (US\$0.80 approx.) a month. Fatima is one of those who requested her own tap. Surprisingly, she opted to have it outside. "There are many other households up the hill who do not have a piped water supply. I want to share this blessing with them all," she said.

When the tap water connection is inside the home, women have to ask permission to fill their pitchers. But Fatima believes that a scheme built with the people's participation should go beyond a particular com-



"There are many families up the hill who do not have a piped water supply. I wanted to share this blessing with them all." ICEF 9375/Rehman

munity. The tap outside the home is used by over 50 families. Other families in the village also share water with people not covered by the scheme. Extension schemes are very much underway, but it will still take some time. The dues collected by the Committee are ploughed into maintenance and repair, and into further extensions. So far they have saved Rs. 15,000 (US\$1,150).

Now Fatima has enough time to take care of her chores, she has been able to plant a small vegetable garden in the courtyard. She

proudly points to her flourishing tomatoes, green chillies, cabbage and spinach.

"It is a great feeling to see your vegetables growing," she says. "It has added variety to our food. We used to cook rice and eat it with pulses. Now, with the rise in the price of rice and pulses, I am beginning to substitute fresh vegetables."

Fatima concedes that bathing used to be difficult. Near the spring, there was no place for women to take a bath. The children used to go and bathe in the stream along with the animals. "We women were forced to take a bath once a week with only a bucket. Water was too precious to be wasted on washing one's body," she says candidly. Now a copious supply in the tap enables her to keep herself and the children clean. It has had a telling effect on the health of the family, even if she does not quite see the connection, preferring to call it "a good omen."

"Somehow or the other," she says, "I used to feel very tired and exhausted all day long due to the burden of carrying water. Now my energy has come back and I do not feel so sick so often. Even the children are better now."

As a mother she feels that her children were neglected. Only three years back, the children used to fall sick very often. Her eldest son's survival was a matter of luck. "As a toddler, he used to have frequent bouts of diarrhoea," Fatima says.

She remembers very clearly how another son, Raza, fell sick at the age of four and had to be taken to the hospital for treatment. The doctors had told her that the child had fallen sick due to unsafe drinking water. "I did not believe it then and laughed at the ignorance of the doctor," Fatima recalls. Now, she thinks, perhaps the doctor was right.

Fatima has always had to manage everything single-handed. Her husband is a bus driver in the city, and comes home only for a couple of days. He usually comes at month's end to give her money. To ensure a constant source of income, however small, is his primary obligation towards his family.

"You know how life is in the countryside," says Fatima. "As long as a man provides a few hundred rupees to his family, he is not failing in his duties. While I have to take care of everything—household chores, children, animals and even cultivation of our small strip of land."

"Over the distant past, in my lifetime," notes Fatima, "this water is the only new development which has touched me directly. I am suddenly convinced that the government and the village care for us women." □

Nigeria



Spreading the good news about water and sanitation

Ohaozara is a place where, at the end of the dry season, the fear of cholera constantly threatens. Last October, UNICEF arrived with a drilling rig and many different teams of workers. In the words of a local chief: "Good water was struck from the rock to the surprise of all, and people were jubilating that UNICEF

has come?"

But while the people of Ohaozara marvelled at this technological miracle, the project teams were after a different kind of miracle: a change in deeper attitudes towards water use and waste disposal.

MAGGIE BLACK went to Ohaozara, and to other places

where the Imo State Water and Sanitation Project is touching the lives of children. She spoke to government officials, project team members, village-based workers, and community leaders, and this is her—and their—account of what is happening.



KEF 9370Black



Chief Awoke Obasi is a modern kind of chief. A large, energetic man, a school-teacher by profession, he wears a polyester shirt and sunglasses, and rides a motor bicycle. But when he talks about the coming of water in Ohaozara, his language takes on a biblical flavour:

"For a long time the people have been suffering. They drink from ponds infested with disease. And when the dry season exceeds its time, there is no water at all, not even dirty water. In 1980, 200 people from the villages in Okposi in Ohaozara died from cholera.

"In 1977 I started to make appeals. I went to the government headquarters in Owerri, and said that they should give us even an outmoded well, no matter how old-fashioned it was. They said that since long they had been coming and going to Ohaozara, and trying all the possibilities, but that there is no water free from salt in all Ohaozara.

"Nobody knew that one day such a team as UNICEF would come. In October last year, they struck the first borehole, bringing good water to the surprise of all. People who thought that they can only get water from a swamp now knew that UNICEF get water from a rock, and they were jubilating that UNICEF has come to save them from the menace of cholera and guinea worm.

"Here in Ohaozara the name of UNICEF is now indelible"

Before the momentous event which took place on 10 October 1982 on a rocky outcrop of sandstone in Okposi, the last time that good water was found in Ohaozara was in 1954. No wonder that the miracle of "water from the rock" has since become part of local legend, endlessly retold.

It has been the subject of newspaper headlines, and many a sceptical technician has visited the place where the first India Mark II handpump was installed in triumphal splendour above two parallel stairways carved in the sandstone. Not surprisingly, government leaders and local politicians have been quick to lay claim to their part of the credit for a "miracle" which could transform the everyday lives of ultimately 300,000 villagers in Ohaozara.

Even if in the villages themselves some of the magic has rubbed off in the subsequent wrangles about the siting of boreholes in the villages and the order in which they are drilled, still Solomon Chima Nkwo, the Eze—King—of all Okposi in Ohaozara, will sit on his carved wooden throne, break the kolanut, and call for champagne to honour his "sons and daughters from the UNICEF."

Ohaozara is a remote and neglected region (officially, a Local Government

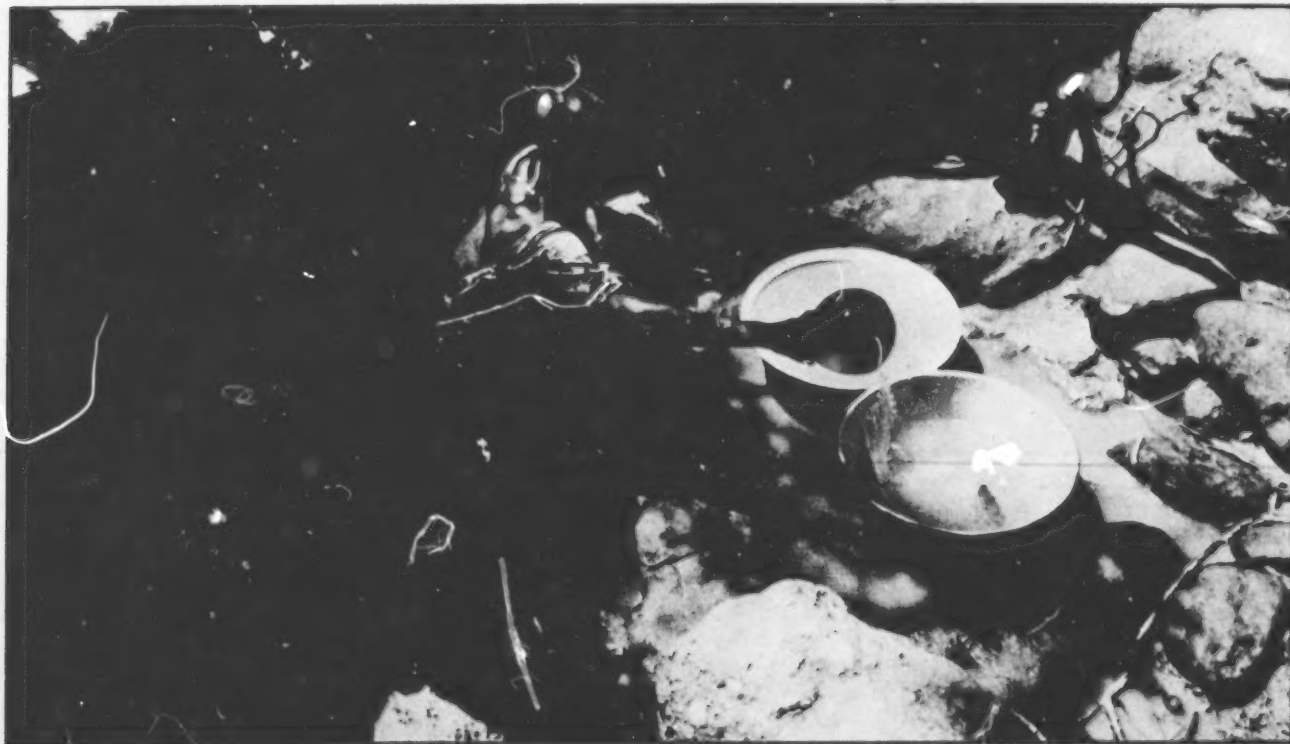
"For a long time the people have been suffering. They drink from ponds infested with disease. Women line up for hours at this small spring. ICF 9376/Black

Area-LGA) of northeastern Imo State, the heart of Ibo land. There are few roads or services and government people strenuously resist serving in a rural backwater which has nothing to recommend it. The people of Ohaozara are "particular," it is said, different from other Ibo people, cut off and locked into the horizons of yams and cassavas they farm from sun-up to sun-down.

In such a place, even for the modern chief on a motor bicycle, the combined application of expert hydrogeology, the latest drilling equipment, and immaculate engineering skill, produce an unimaginable result in an unimaginable time frame: a new borehole in one, or at most two, of those timelessly indistinct farming days.

The 51st borehole in Okposi

Today, the great yellow truck with its compressor, its water tank, and its drill at the back, has been wheedled and negotiated into a tricky position at the far edge of Okposi territory. Here, over a knob of sandstone in the middle of the track to Enogorugu village, the lumbering machinery has been raised on its hydraulic jacks. The air is filled with a stinging cloud of grey dust and rock chips, while the drill-bit screams and hammers its way into the ground.



An aquifer bearing enough water for a good handpump yield is struck at 75 feet. By tomorrow, the well will have been developed, and the handpump installed. Only the result of the water's chemical analysis stands between the people of Enogorugu and the use of their new water supply. If the water is pure, this will be the 39th successful borehole out of 51 to be drilled in Okposi.

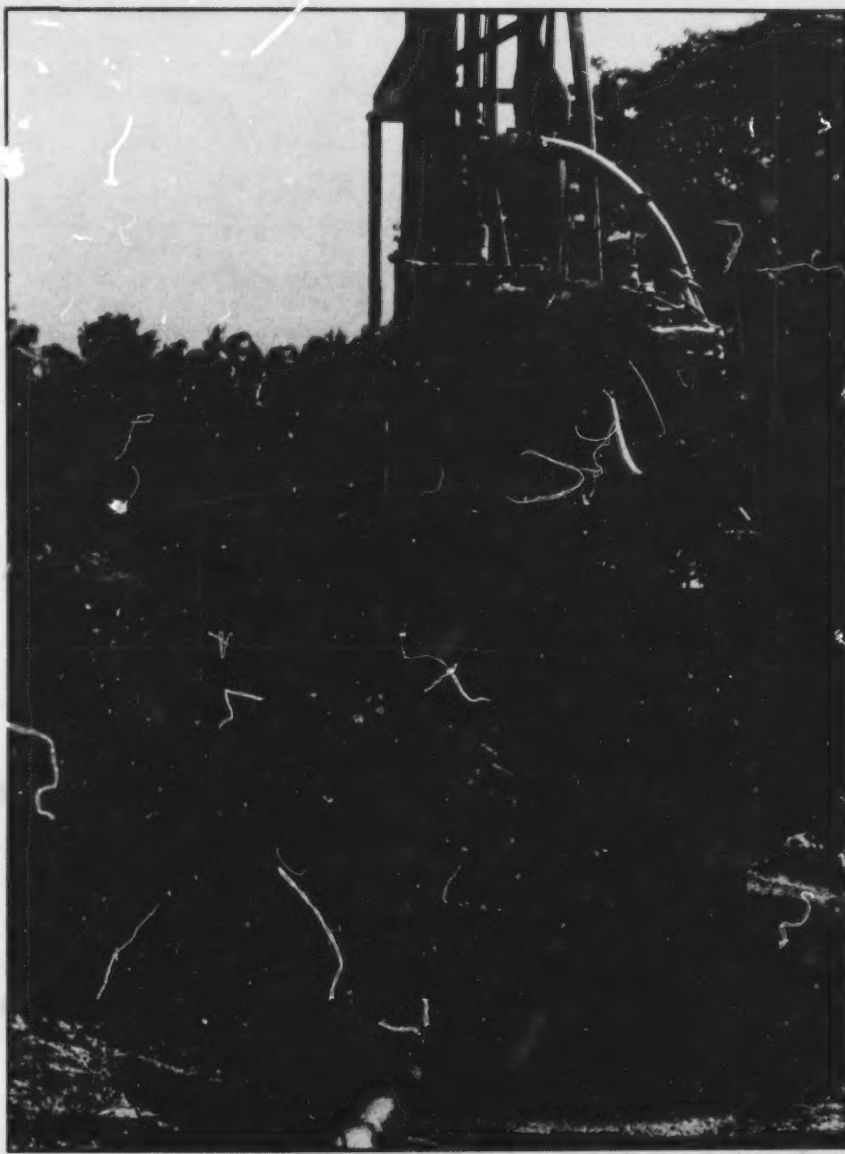
The rig, its operators, and their spell-binding achievements never fail to attract a great crowd of onlookers: even Chief Obasi has appeared on a motorbike from the other end of Okposi to witness the spectacle. But to UNICEF, and to all those involved in the Imo State Rural Drinking Water and Sanitation Project, this moment of technological marvel is the easiest, almost the most mundane, part of the project process.

It involves the project's most expensive capital components, and their usage requires the highest of the scientific and technical skills at the project's command. But however brilliant the hydrological accomplishment it represents, the "striking of water from a rock" will not on its own achieve a transformation in women and children's health, as water supply projects have shown time and again all over the world. Major health gains—a dramatic drop in childhood diarrhoea or worm infestation—cannot be won simply by improving the quality and quantity of water available to the community—which has after all its own justification; attitudes concerning its use must also be influenced in a decisive way.

What is unusual, if not unique, in the design of this water supply and sanitation programme is the degree to which the familiar rhetoric about the vital health education component has been translated into practice. Leaving aside capital costs in drilling equipment, the vast majority of the project's resources and managerial efforts have been directed not at impervious outcrops of sandstone, but at something even more immovable and opaque: the bedrock of fixed human values and attitudes about water and its use, and about how and where people deal with that most noxious and private substance, their bodily wastes.

The sequence of activities

The arrival of the drilling rig at Enogorugu village represents a final and climactic punctuation mark at the end of a sequence of project activities which began



The air is filled with a stinging cloud of grey dust and rock chips while the drilling bit screams and hammers its way into the ground. UNICEF 9377/Black

weeks and months ago. The drilling of a borehole is the pay-off, the prize, provided when a village has demonstrated its willingness to question and begin to change deep-set habits concerning water use and excreta disposal.

The sequence of project activities is imprinted not only on the plans, schedules, and reports which constitute the Imo State project's exhaustive literature. It is also imprinted on the minds of village leaders, those standard-bearers of new behaviour patterns, indicating that the idea of the programme process has already begun to

percolate through the strata of village society.

Chief Obasi, the modern chief of Umuka village, describes the sequence: "UNICEF arrived with different teams, and the people of Umuka were very happy to see them. There was the enumeration team, and the mobilization team. Our people picked up interest, and they chose six persons to be trained as village-based workers, to be directing the members of the community on the intentions of the UNICEF officials.

"After the work of the mobilization team came the training team, and those six persons attended at the Polytechnic, and came back bringing the good news of water and sanitation. Then came the sanitation team, and finally the drilling team, and in this

Umuka community the first borehole was struck."

The sequence of events described by Chief Obasi has an inherent purpose. It shows the villagers that UNICEF and its government partners mean what they say about preventive health, and entices them to begin to alter existing habits before the arrival of the new water supply assuages their literal and metaphorical thirst. It also elicits community involvement from the outset. There are altogether about 70 members of the various teams, almost all of them



Chief Awoke Obasi of Umuka village: a modern kind of chief. UNICEF 9378/Black

seconded to the project from one state government ministry or another. They spend most of their time with the people in the villages, endlessly reinforcing fragile links in the tangled skein of community relationships, through which the "good news about water and sanitation" might otherwise slip.



Adapting and re-adapting the programme "package"

What the project personnel have learned during that process of continuous encounter has enabled them to adapt and re-adapt all the intricate details of what is called the programme "package". This process of constant refinement, applied alike to questions as significant as where in the government structure final authority for the programme resides, and to details as minute as the phraseology to be used on a monthly report form for a village-based worker, has been integral to the programme from its inception.

The project was first launched in a dif-

ferent LGA called Ukwa, way to the south of Ohaozara, and worked its way there through three "autonomous communities" – the official name for a group of villages such as Okposi. Now that its activities are at different stages in three autonomous communities in Ohaozara – Okposi was the first – the various teams and the timing of their various tasks have all been synchro-meshed and calibrated to operate as smoothly and effectively as the "striking of water from the rock".

Just as the use of the drilling rig requires the highest technical expertise, this exercise has demanded the highest skills in human resources management. And the result is a programme design which is as finely-tuned as possible to the realities of rural life in Ibo land, and one which on paper, in practice, and in villagers' perceptions coincides to an unusual extent in rural development programmes in Africa.

At the moment that the borehole is being drilled in Enogorugu village at the far edge of Okposi, the first autonomous community, a range of other project activities are taking place simultaneously all over Ohaozara, all at their prescribed moment in the project cycle. The mobilization team – the vanguard – is visiting a village in Isu, the third autonomous community to be reached, bringing "the good news of water," and screening the candidates selected by the village for training as their VBWs – village-based workers.

The training team is involved in two training exercises at different stages, one for VBWs already at work in the second autonomous community, Onicha, and one for newly-trained VBWs in the third, Isu. The environmental sanitation team is still haranguing and persuading villagers in the first, Okposi, to build improved pit-latrines or face the possibility that their new hand-pump will be disconnected.

The enumeration team, which is normally ahead of all the other teams but has a schedule not quite so tightly dovetailed with theirs, is counting households in a village in Isu prior to carrying out a household survey, and is collecting the stools of children from a primary school for intestinal parasite analysis.

In the sequence: enumeration, mobilization, selection of VBWs, training of VBWs, training follow-up, environmental sanitation, and finally drilling and pump installation (some of which overlap anyway in any one village), it does happen that one team catches up its predecessor, or lags behind as the environmental sanitation team is now

doing. Making the necessary adjustments in ways that do not cause the team members frustration, or leave them twiddling their thumbs in inactivity, is part of the human resources skills demanded of the project staff.

Harmonizing the rhythm

Their task is particularly sensitive as the rhythm of the project must harmonize as closely as possible with the rhythm of village life. The time-frame for the drilling of the borehole and pump installation at Enogorugu – two days – is known, as is the initial training period for the next batch of VBWs from Isu – two weeks. But when it comes to community investment and effort – such as that required for the building of a pit latrine – the time-frame is outside the control of any of the project staff.

Co-ordination is highly delicate, but to the extent that it can be, it is both disciplined and flexible. This does not prevent it running into snags. Eze Nkwo of all Okposi in Ohaozara may sit on his wooden throne and drink a toast to his visitors from UNICEF. But it does not quench his outrage that drilling has proceeded in village X where no improved pit latrines have been constructed, before it has come to village Y where pit latrines are already in place, nor his private conviction that undue influence must have been brought to bear on a susceptible driller.

The explanation has to do with sandstone deposits, village boundaries, the need to keep a rig worth \$250,000 in constant action, and to avoid zig-zagging Okposi's roadless terrain with cumbersome and sensitive drilling equipment according to a sequence of villages which makes no logistical sense. The Eze is mollified by the news that the handpump in village X will be disconnected if there is no rapid progress on pit latrine construction.

The activities of the three teams – mobilization, training, sanitation – most concerned with changing the villagers' behaviour towards how they collect water, how they store water, how they use water, and how they dispose of waste, particularly the bodily wastes which pose most risk to health, are all principally directed at putting in place a network of fully-trained VBWs – village-based workers. It is these men and women who will, it is hoped, continue to pursue the project's goals long after the teams, the rigs, the vehicles, and all the paraphernalia of UNICEF's presence in Ohaozara have moved elsewhere.





Just as the time-frame for one type of project activity – pit latrine construction – is inevitably much more elastic than the time-frame for drilling or training, the time-frame for transforming people's deeply ingrained behaviour in intimate parts of their lives must be considerably longer than the weeks and months of the project staff's presence. The provision of water creates the circumstances in which that transformation can now be set in motion. But no matter how intense the project's water and sanitation blitzkrieg, behavioural transformation can take years, even a generation, to accomplish fully.

Summoned by the town crier's gong

At Mgbalaeze village in Isu a great crowd has gathered together. It flows out of the community centre hall onto the surrounding verandah, where loudspeakers blare out music and an incomprehensible stream of exhortations, indicating that an occasion of importance is in train. These loudspeakers belong to the mobilization team's specially equipped Landrover, which is again visiting Mgbalaeze after a false start last week when the turnout was poor. Charles Ani, the village chairman and an active supporter of the programme, sent out the town crier with his gong on the previous evening to summon

The rhythm of the project must harmonize with the rhythm of rural life. A Family prepares gari – cassava porridge – for sale in the market. ICF 9379/Black

everyone for community labour, knowing that for such a summons few will dare escape their obligation.

Among the melée flowing backwards and forwards through the doors, half listening to the regulation speeches from the platform, are the candidates volunteering for selection as VBWs. Two members of the team, Joseph Eze and Godwin Oko, are carrying out interviews in a corner of the verandah. The candidates must meet certain criteria: they must be settled members of the community, married, and preferably with children – there are odd cases of VBWs using their training to rush off to town and try for professional employment. And they must be able to read and write to a minimum standard, for they will need to fill out questionnaires, follow manuals, and submit reports on their activities.

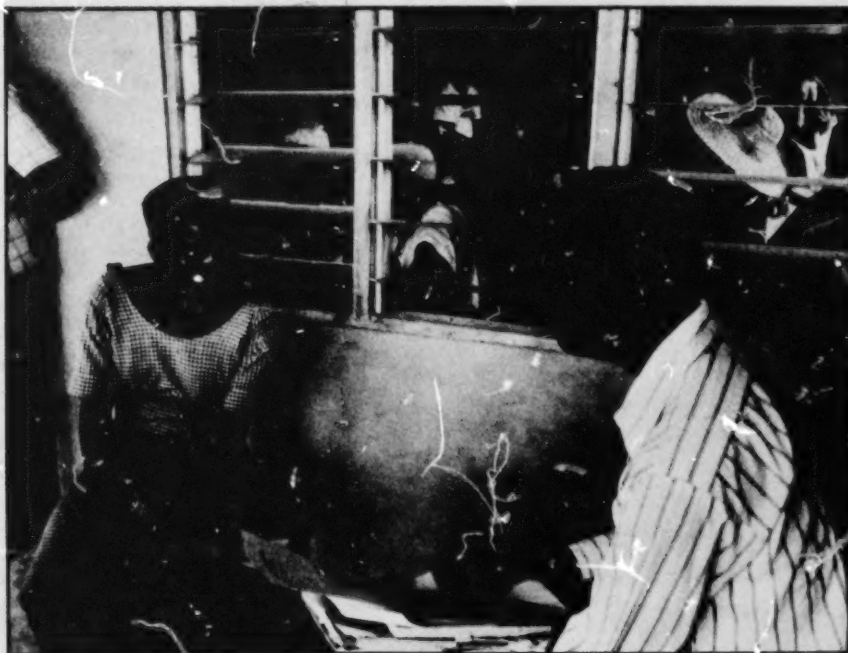
A shy young woman, Felicia Onu, is propelled forward by her friends. She has come dressed in her best, but is intimidated by the interview, an unfamiliar experience for her but one that gives an impression of how outgoing she will later be in carrying out a role that depends upon her powers of persuasion. At first her instinctive reserve leads her to say that she is unmarried. Then, when

she finds this eliminates her candidacy, she changes her mind.

Felicia is asked a string of questions: "Are you aware that UNICEF has come to this place to assist you to eradicate diseases? We want people to be trained, like they were in Okposi. Are you ready to help the people, as UNICEF helps the people? If you go for training, UNICEF will care for you, and when you return, your people will care for you. This work is not something you can finish in a short time. Do you want to go for training?" Felicia Onu replies simply: "Yes."

Then she is invited to read out, as a literacy test, the list of items she must bring to the Polytechnic on the appointed day: "Number eight, toilet soap. Number nine, packet of Omo. Number ten, a rubber sheet." Her voice is faint but she doesn't often stumble. Felicia Onu is accepted. She smiles relief, but it is hard to know just how effectively she will serve Mgbalaeze: the test will come later, when she has finished her initial two weeks course, and training team members come and watch how she puts her new knowledge into action.

Meanwhile Charles Ani is giving a rousing speech from the platform inside the hall, punctuated by loud cheers and the sound of the town crier's gong commanding silence. "The god of Mgbalaeze is the god of Okposi and the god of UNICEF. It is well-known that



wherever there is a water problem, UNICEF is there. This is a noble community work and our co-operation is assured." Charles Ani is also the chairman of the steering committee for the project in Isu, a group of chiefs and men and women leaders who will guide project activities in the villages in Isu.

Tying knots in the village fabric

The formation of a steering committee at village level, another function of the mobilization team, ties a knot in the mesh of the village's social fabric to help hold in the project "catch". If the VBWs in the village become demoralized because people won't do as they say they can turn to the steering committee for help. And it is the steering committee's responsibility to ensure that the VBWs are compensated for their work, by exacting community levies or decreeing free labour on the VBWs' farms.

At another village in Isu the steering committee is meeting for its first important session. The six VBWs from this village completed their two weeks training course at the Polytechnic along with around 50 others at the end of the previous week. Now the moment has come to introduce them to the steering committee and to give them a chance to show what they have learned.

In an open clearing under the shade of a huge tree whose spreading roots provide a perch for around 40 children consumed with curiosity, a table and benches have been set up. At the table are the village chairman, the

Felicia Onu has come dressed in her best hoping to be selected as a VBW. But she is intimidated by the interview, a strange experience. ICF# 9380/Black

secretary of the steering committee, and Philip Mwankwa of the training team. On the bench to one side are the four male VBWs; in front are the male steering committee members: all the women members have been obliged to go and work on their farms as this is the height of the planting season.

The meeting takes the form of a presentation by each of the VBWs in turn of one of the subjects he learned during the two residential weeks at the Polytechnic. Afterwards each answers questions posed by the steering committee members.

Philip Mwankwa first explains that the VBWs have been trained to educate the community "on health and environmental hazards, as well as the treatment of diarrhoea by oral rehydration salts." He says that the villagers should listen to any advice they may give, especially on referral of diseases to the health centre. He explains that, as a result of cholera and guinea worm in Ohaozara, an appeal was made to UNICEF by the government, and that UNICEF designed the programme.

"Now that the VBWs who volunteered have been trained, to be effective they need to be compensated. They need encouragement, they cannot go hungry and do their work well." He pleads with the steering committee to be alive to their responsibility,

to make the activities of the VBWs in the village accepted and rewarded. Then he introduces each VBW by name.

Each VBW is fluent and recites his lesson well. Joseph Ofia is the first to speak: "Diarrhoea comes from infections, from dirt thrown about, from not washing your hands before eating, and from not covering food when it is being prepared. We are forgetting how flies contaminate our food. And we don't mind where we collect our water, we take it from ponds and streams, and we do not boil it, it is not well protected. We drink, and the result is we get cholera, we get guinea worm." These two infections are the most feared and hated in Ohaozara.

"The vegetables we eat, and the fruits, are not washed properly, and I suggest that we should purify the water, we should settle down the sediment. Before going to bed in the evening we should boil the water and allow it to cool down. Put it in a clean pot set aside for drinking. Cover it with a fitting lid, and use the 'two cup' system: use one cup to take the water from the pot, pour it into another cup to drink from, and keep the first cup on the water pot upside down to prevent it getting dirty."



When the first question comes, it is about diarrhoea. Joseph Ofia recites the recipe for home-made ORS, using an empty beer bottle as a measure, boiled water, half a teaspoon of salt and four lumps of sugar. "In the event of failure, the mother should go to the health centre."

The next VBW, Simon Nweke, talks about refuse and the disposal of excreta. "The community should be required to avoid throwing refuse about. All the refuse including empty cans and bottles should be collected. The grasses around the compound should be spread in the sunshine to dry, and then burned, as with calabashes, paper, and old clothes."

"Children and adults should be stopped going in the bush to pass stools. Before the improved pit latrine is introduced, the 'cat method' (covering the stool with earth) should be used. Decayed food, rotting food, and excreta attract flies. They carry infection back to the kitchen and in this way diseases spread."

Each VBW is fluent and recites his lesson well. Joseph Ofia: "Diarrhoea comes from infections, from dirt thrown about, from not washing hands."
ICEF 9381/Black

A question comes from a distinguished-looking man in flowing robes and a cap, a member of the steering committee. "Why do people from developed countries bring in this message that the flies in our countries are sinners? Do the flies sin in their countries? Why do they ask us not to go in the bush?" Simon Nweke is a little non-plussed. "We know that flies are eaters of rotten food, and that what a fly cannot eat, a man cannot eat. We must know that flies are our enemies. We cannot kill all the flies, but we can protect ourselves from the damage they do us."

The meeting goes on for two hours or more. Then the new VBWs set off on a tour of village compounds. Sure enough, there are exposed foodstuffs in the kitchens, dirty paper and cans lying around outside, and waterpots with lids half off, their contents open to the elements. Philip Mwankwa points condemningly to each infraction of "the news about water and sanitation."

The young VBWs shuffle nervously, their hands tightly clasped behind their backs. In the future they will have to point out "the sins of the flies" to elderly and distinguished heads of household, now sitting

mesmerized by these goings-on at the doors of their yam barns. The full and daunting force of their new and perhaps unwelcome responsibilities is striking some of the VBWs for the very first time.



Rehearsing the songs for their graduation

At the Polytechnic in Okposi, other members of the training team are holding a one-week follow-up course for a group of around 45 VBWs from Onicha, the second Chaozara autonomous community to be reached by the project. Each group's training takes place in three phases: the first is the two weeks' residential course which Felicia Onu will shortly attend; the second is a seven-week phase in their villages, when each VBW is visited and his or her performance closely monitored by members of the training team. Then comes a final one-week course, back at the Polytechnic, where problems are discussed and clarifications given on matters that may not have been quite understood the first time around. After this the VBWs graduate, receiving their certificate at a special ceremony.

The Onicha VBWs are now, on the last day of their last residential session, rehearsing the songs they have composed for the great day. Many of the Ibo songs, led by a single female voice, with the refrain coming from the whole stamping, rocking hall, are about the "news of water and sanitation." But in English they sing rousinglly:

UNICEF is for the children,
UNICEF is for the mothers,
UNICEF is for the people,
UNICEF is for the nation."

During their seven weeks' "practical" in their villages, the VBWs have kept diaries of their visits to the various compounds under their responsibility. All the details of how people collect water—whether in buckets, bowls, calabashes, or jerry cans which, with their closed stoppers are the most hygienic—and how they store it, are listed. So is their system of defecation: into a stream, behind a log, in a chamber pot or a pit latrine are the possibilities envisaged. There is a space for observations on cleanliness, and on the method of refuse disposal, and a list of 17 possible illnesses that the VBW may have encountered among the family members. For each compound visit, a diary must be filled in, including whether there was a follow-up visit and if



any improvements had taken place.

One of the VBWs adding his voice to the chorus in rehearsal is Innocent Chukwu, a young man of 24 from the village of Anwuke. Innocent Chukwu has been a meticulous diary filler. He has received a high score from his trainer, 80 out of 100 possible points. His weakness appears to be community organization: he has not liaised successfully with his *eze* or his chief to get the community working on market cleaning or on road mending. But Innocent Chukwu has made one mistake, which many others have also made. In the columns for cases of illness he has simply ticked "guinea worm" or "diarrhoea," without recording how many cases there were or whether they were among children or adults. This point has been given much emphasis in the week's discussions.

Innocent Chukwu has run into certain problems commonly reported. "You know, we must find some ways of convincing the people to know that what we are telling them is right. At least I must know that even there are some teachers or government workers that when they were schooling, they were drinking the same water as their parents. Now they are boiling their water, and they are not suffering from guinea worm, but their parents continue to suffer. They say: 'How can I boil water? I have no firewood'. Those people think that the teachers and government workers do not suffer from diseases because they have money. We tell them again and again that it is not the money, it is the germs in the water, and that it must be boiled. I think they are beginning to believe me."

There are problems, too, over that sensitive subject, sanitation. "When I spoke to the villagers about the cat system of excreta disposal they did not welcome it, they did not welcome it at all. I told them: 'If you do your defecation in the bush, a fly will come and perch on the stool. You must cover it because a fly has wings and can go anywhere. Even from three miles away it can enter your compound and put germs on your food'. Gradually I think they are beginning to understand. In time I think we can convince them. The people like us, they listen to what we say."

Not the nicest subject

Grace Norman, a health officer seconded from the Imo State Health Ministry, a redoubtable and determined figure, feels that when people begin to understand the connection between poor excreta disposal and

ill-health they will take action. Cholera is the disease which strikes fear into people, and guinea worm is a painful and debilitating complaint, much detested. Drinking infested water is the only way the worm can enter the body. It matures in the stomach, and finally emerges millimetre by painful millimetre through a lower limb, virtually immobilizing its host during the days and weeks of the extraction process.

"When I explained to some of the women that the worm was in their water, too small to see, they were amazed. And they did not understand about flies either. They said: 'How awful, if only we had known'. It is not nice to be always talking about pit latrines, about excreta, about diarrhoea, about stools, but anyway we do it. It is necessary to persuade the people to understand and change their habits." Grace finds it hard to bring people to question their way of life. "These people don't know anything except their farming life. When you ask them: 'Wouldn't you like to change?' they look at you as if it is you who needs to change. And maybe they are right to feel like that. The only thing we can do is bring some basic amenities, that is all. And then go away."

Pit latrine construction has a tendency to lag behind. The design Grace Norman and her team are promoting is the ventilated improved pit latrine, with a double chamber, a concrete slab, zinc sheeting superstructure with a pipe and a gauze-covered window. But unlike the borehole and the pump whose N4,000 (US \$5,700) cost is met by the project, there is little in the way of subsidy. Villagers must raise the money—N185 (US \$264)—to build each latrine, and local masons and carpenters have to be trained, and willing to give their labour free or else be compensated by the community.

Umuka, Chief Awoke Obasi's village in Okposi, has been a model village in pit latrine construction. "Our people are very happy with the pit latrine, and even if today you do not see many, by the end of the year you will see them. In other villages they have stopped building them. Why? Because of disunity."

By disunity Chief Obasi means, essentially, lack of community organization. In Umuka, days are fixed for digging the pits. "Members of the community come and dig where we tell them. When it is time for masonry work, we have some masons ready trained. Each group—the daughters of Umuka in their age-group, the sons in their age-group—have their task. Some bring gravel, others bring sand, and they have all given money. The masons are paid N5

(US\$7) a day for feeding. We have no grumbling. We sit down and levy ourselves, and listen to each person, how much he or she can pay at that time, depending on the weather and the harvest.

"In Umuka we have three difficult heads of household who will not co-operate. They drink the water from the pump, but whatever we say they do not pay. Even the UNICEF people came to appeal to them, but they refused. They said UNICEF had the money to drill the well and that there is no need to contribute. They say the water is UNICEF water, given free, and that no-one has the right to stand in their way. We have decided to forget them. If we go on, we pursue a shadow."

The vexed question of compensation for VBWs

A chief as dynamic as Chief Obasi is not completely exceptional, but he is unusual. Communities suffering from "disunity" not only fall behind on pit latrine construction, but somehow cannot resolve the vexed question of compensation for the VBWs either. If the steering committee fails in what Philip Mwankwa of the training team termed their responsibility in this matter, VBWs can become demoralized and disenchanted with their new tasks. The sum of money is less important to most than the recognition it represents. For, as Grace Norman expressed it, "this is not the nicest subject": it is not easy to chivy neighbours endlessly about their unclean habits.

Away to the south of Imo State, in Ukwu, the Local Government Area where the project started, the problem of compensation for the VBWs has become acute. Very few have received even a modest fee on a regular basis, and resentment is hampering their motivation: some have dropped out.

Every month there is a meeting of all the VBWs in Ukwu. The president of their association, a sand and gravel contractor, Ishmael Azubike, recalls that the chiefs of all the villages met some months ago to resolve the problem, and agreed on a monthly allowance for each VBW of N20 (US\$3). "But up to now we did not receive anything. The villagers feel they have no money to pay us, and that the local government should pay us. We will continue to do our work because we must save lives, but we are not happy with the villagers and we are not doing as much as we used to. Some villagers say: 'You are a businessman, and you have more money than we do'. But while I do the work, I cannot do my personal job.



Ishmael Azubike, the chairman of the Ukwa VBWs, has recently built his own latrine. He instructs his daughter in the right way to use it. ICEF 9383/Black

"Yesterday we had a meeting and we passed a resolution to write to Lagos that because the villagers did not come forward with the compensation, we will not be spending time going to people's houses telling them to keep their compounds clean. I myself am going to address that letter to Mr. Reid the chief of UNICEF in Lagos. I shall write that letter, we shall register that letter, my pen is very strong now."

It is not so much the sum of money—which is an insignificant amount, particularly to a man like Ishmael Azubike with his own business and a fairly large farm holding. It is the absence of appreciation and recognition for the VBWs' status and services that grates. It is not only Azubike, regarded by some as a little above himself, who feels let down. So does another VBW, Cristianah Ogbonna, a delicate bird-like lady whose diminutive stature and sweetness of manner bely her forcefulness. In the group of VBWs in which she was trained, she graduated with the highest marks, higher even than Azubike's. Unlike him, she states her grievance with reluctance, but she states it eloquently:

"We are nowhere in this work. If we go to the government authorities, they say that we are under UNICEF. If we come to UNICEF,

you say that we are under the local government. We have heard that there was a promise, that we should be given an allowance. But this promise will never be fulfilled because the villagers like everything to be free. As we go around they say: 'thank you, thank you', but that is all. People say that things are hard and they will not pay. Unless the action comes from UNICEF, I don't think there will be an action. We spoke to the chief, but it yielded nothing."

The promised first aid kit

There is another bone of contention among the VBWs in Ukwa which also has a bearing on their lack of recognition. Cristianah Ogbonna: "Things will be better if I have a first aid kit. At the training we were promised it. We expected it. We were told we would give out tablets free. This will make a great difference to people. We refer them to the health centre but when they arrive, they pay for tablets or for an injection like all the other patients. They come and say to us: 'What did you do for me?' They are not pleased."

"The government training team members said they did not give us a first aid kit because of the danger that some VBWs will make themselves into quack doctors. They might say: 'Look at my box,' and they might sell a tablet." This is confirmed by Cecilia Onwugbule, the principal health sister at the local health centre, who was also a

member of the project's training team. She says that the VBWs showed such over-enthusiasm for their curative role during training that the training team had second thoughts about the first aid kit.

But Azubike thinks that the problem is more imaginary than real. "If I have the first aid kit and I can give a person an aspirin, more people will come to me and ask for my services, more people will respect me and give me morale. We cannot keep the box in our own houses, but in the chief's house and go there twice a week to see people. To replace the medicines, we can collect money. When you go to a prayer house, and the prophet cures you of an ili, then you repay the prophet. The same will happen with our medicines: the villagers will repay us."

"You question whether you can trust us, but you do not remember the lecture when you told us that we were the ones trusted by the villagers and that was why we were chosen. The VBW has no right to utilize the money or the medicines for himself, but to take the money to the government health authorities. This is up to the chief and the health committee to assure. If he is a wise chief he will control this, and see that the VBWs do not practice medicine in the wrong way."



Cristianah Ogbonna: "We are nowhere in this work. If we go to the government, they say we are under UNICEF." ICEF 9382/Black

Azubike has one other complaint. "We were taught the theoretical side of pump maintenance, but we were told we would be given a practical side and that has not been done. I am ready now to put on an overall and go for training. If I can mend the pump at the school which has broken down, people will respect me. I need respect because I want to maintain my dignity as a

nationalist." Unfortunately, it is not possible to train and equip VBWs to perform major pump repairs. This must be the task of mechanics, based at the project headquarters workshop. But above-ground maintenance — greasing, tightening bolts — this could be carried out by VBWs and they will eventually be trained. Whether this will satisfy Azubike remains to be seen.

Cecilia Onwugbule, the health sister now in charge of follow-up since the project moved to Ohaozara, is sanguine about progress in spite of Azubike's "strong pen" and resolutions. "I don't say the VBWs are very active, but they are doing their bit. By now it is possible to tell which ones are really keen and hard-working, and which ones are not interested." Some have dropped out because they never got back into the work after delivering a new baby. Others, like Cristianah Ogbonna who had her fourth child a few months ago will probably continue, allowance or no allowance. "We intend to go around soon and see them all and how they are doing." But Cecilia Onwugbule has a problem in that context: an all-too-familiar shortage of transport.



Exerting effective pressure

It was as a result of the experiences in Ukuwa that the idea of village steering committees, to whom the VBWs are responsible, was introduced in Ohaozara by the project team. This is an example of the process of continuous refinements of the project design which the teams introduce as they go along. So far it is too early to tell whether this mechanism will of itself resolve the problem of compensation and recognition for the VBWs.

Where there is what Chief Obasi calls "disunity", the steering committee may not be able to exert effective enough pressure. And meanwhile, on moral and humanitarian grounds, it is not fair to suggest that villages be denied "the striking of water from the rock" and the resultant salvation from "the menace of cholera and guinea worm" because the capacity of the chief and elders for community organization is less than that of a Chief Obasi.

The real problem — and this is a problem common to many schemes where a pivotal element is the role of volunteer community workers — is that the VBWs do not belong to a category of "officials" recognisable in the villagers' existing perceptions. They are

"The people accept this and they do it"

Mrs. Ebere Okereke is 28-years-old and she already has seven children. The youngest is a baby boy aged two months, called Nkemdirim, which in Ibo means: "Let my own be mine for my own." It is Nkemdirim who has kept Mrs. Okereke at home today: it is the custom for women with newly-born infants not to take part in farming activities, even at the height of the planting season.

Mrs. Okereke is a village-based worker in Umuka village, the village of Chief Obasi in Okposi. Mr. Okike Ukpa of the training team is a local man and knows that she will be at home for a follow-up visit.

"Since the wells and the handpumps came, the six of us VBWs have organized ourselves to keep watch on the sites. We avoid the people from using dirty vessels in collecting their water. They sweep the area around the handpump every morning, and avoid people defecating near the site. There are to be no dirty things and no refuse. The people accept this and they do it," she says.

"People are very happy. This is the first time in their lives they can witness a handpump giving clean water to be easily collected, and this they owe to UNICEF." Perhaps as a result, people pay their levies regularly, and Mrs. Okereke re-

ceives her monthly N20 (US\$29) allowance and is content.

There are some problems with the new latrines. "At the beginning the VIP latrines were built on sites selected by the sanitation team and the chief, and the landowners objected. The steering committee spoke to the landowners, and now they do accept." The latrines so far constructed are public latrines, constructed with community resources, for demonstration purposes. "Many people have not started to build their individual household latrines. Many promise to start, but they do not do so. They say funds are the problem. We must increase."

Ukpa asks her why she has bathed only her baby this morning, and not her other children. He says she should be an example to others, and that if she does not wash her children others will not. Mrs. Okereke looks bashful. She has no answer. Has she taught the use of the chewstick for brushing teeth to children in the surrounding compounds?

"Children learn these things in group discussions in the evening. When their mother does wrong things, children of five- or even seven-years-old will say: 'I will report you to the VBW, and you will be made to change.'"



UNICEF 9384/Black

mainly young men and women, and they do not carry the authority automatically conferred on the *eze*, the chief, and the traditional leaders. Nor are they employees of the government, the other familiar category of workers. So from whence do they derive their authority? As Cristianah Ogbonna expresses it: "We are nowhere." Without a

Chief Obasi to provide continuous endorsement; or without a Cecilia Onwugbule to leave her health centre to the care of her subordinates and set off around the villages to confer her endorsement on the Ukuwa VBWs, will they be able to keep on going on until those intractable behaviour patterns have all been changed?



"The people are not attending to us"

Mr. Oghonnaya Agwu is the chairman of the VBWs in Okposi, and he lives in a village called Mebiawa where the "good news about water and sanitation" has not been received as warmly as it has in Umuka, for example. "To be frank, when we trained, we loved to feel eager to do our work. But certain ones have dropped out because of lack of support from their own people. They are not attending to us as we expected, they don't cater for us, they don't give us some allowances.

"During our training we read some magazines from India, where people like us are treating cases of diseases like malaria, and from these cases they are getting something—enough to buy soap, to keep themselves clean, for example. Some of our chiefs tried for a while to persuade the people, but there was no support from the government authority so they gave up.

"Teams visited the villages to encourage the communities. The steering community for all Okposi talked of giving us N10 monthly. But in some villages there was no result. In Umuka they are giving that and even more. But not in our village. They promised to do work for us at our farms, because they could not give us money, they said. Now the plant-

ing season is here, and perhaps they will do it. But as for community levies they will do it for the pit latrines, but not for us. They say UNICEF trained us and should give us salary.

"The people do not understand the importance of VBWs' work, they do not see it as UNICEF sees it. But I do see a change in attitudes. The cleaning of compounds and houses has improved, roads are kept tidy and so is the marketplace. The message about cleanliness is getting through. Before, a woman going out of her house to go to market would not wash. Now she washes her face, her hands and her clothes more often.

"As time goes on, our people will realize the importance of the UNICEF project and the importance of the latrines. I think people do believe the connection between faeces and disease. If people are faced with two things, the latrine or the water, they will choose the water. But they appreciate both things.

"One thing we have pushed is the market. It is an offense to display food on the ground, and when we catch such people we gather the items, we gather the mangoes if they are rotten, and throw them in a pit. We report the case to the market committee."



Oghonnaya Agwu (left) and his chief. UNICEF 9385/Black

Only the long-term evaluation of the programme can provide an answer. This is why the activities of the enumeration team are ultimately as crucial as the others in assessing the success of the programme. Only the actual results in terms of children's lives saved and improved health will show whether this tremendous effort to

make something real of that little phrase "the health education component" is all worthwhile.

Back in Ohaozara at Ushiri primary school, Robert Emeh, a government statistician seconded to the project and leader of the enumeration team, is organizing an unruly line of six- and seven-year-olds. A

table has been set up on the verandah outside one of the classrooms, and three of his team are writing the children's names in ledgers and giving out plastic pots and spatulas. In Ibo, Robert explains what they are doing to the children: "We are trying to find out whether there is something wrong with your insides. You take the pot and the spatula, and when you pass your stool early in the morning, you put a piece in the pot and bring it back here this time tomorrow."

Altogether, the team needs samples from 100 children. Most parents are keen to send their children for the survey because they understand that their children's health is involved. The team members give each child a docket number and record family and household details. Should the child turn out to be suffering from diarrhoea, that will also be recorded. The samples are analyzed in a little laboratory up the road, specially equipped by UNICEF, and are then transmitted to Lagos University for further analysis.

Looking at worms

Michael Ajala, the project's microbiologist, looks at a smear from a stool under his microscope. He is trying to establish the degree of hematode (worm) infestation among Ohaozara's child population. In the sample he is looking at, every conceivable kind of worm—round worm, long worm, short worm, crooked worm—is present. This, he says, is not unusual. Many of the children outside the classroom had the protruding stomachs that are a giveaway of great numbers of parasitical inhabitants. Parents are under the delusion that the child looks well-fed.

Six months later the team will return. If they can find the children who had diarrhoea on the previous occasion, they will include them in the next survey. But the main purpose will be to assess whether the level of hematode infestation among the children in Ohaozara has declined.

The team also undertakes a survey on diarrhoeal disease. For this survey, teachers and other community members such as the new VBWs are enlisted to distribute charts to mothers in the villages, and help them record information each day about the kind of stools their children are passing. After a given period, the charts are collected and analyzed. The exercise is repeated—not necessarily in the same households—some months later.

At another village called Amenu teams of enumerators, most of them students, are



counting compounds and interviewing the heads of household. There are no reliable census data in Ohaozara, nor indeed in most of Nigeria. And apart from the need to know how many people, especially children, there are in the project area, there is also a need to find out as much as possible about all their existing habits and behaviour patterns concerning water collection and storage, food preparation, and waste disposal before it is possible to assess what needs to be changed, or later on, what has been changed.

The full parameters of the enumeration team activities are exhaustive, and the number of people involved is far the highest of all the teams. This part of the project is supervised and designed by staff from the Ross Institute of Hygiene in London, which has been involved since the outset.

Whatever the precise scientific answers the Ross Institute computers eventually come up with on the impact on child health of the Imo State Water and Sanitation Project, it is impossible to be pessimistic. "Here in Ohaozara the name of UNICEF is indelible," says Chief Obasi. Firstly, there was the miracle of water from the rock, and the comparative abundance of water and its good, clean quality will in themselves do a lot to save people from the "menace of cholera and guinea worm." Secondly, it is impossible to imagine —



VBW Francis Okoro draws attention to the children's role: The boys and girls say to their parents: "You should boil the water." ICEF 9386/Black

even if momentum does decline when the teams pack up and move onto the next Local Government Area—that the weeks and months of "health education" will not make their mark.

Perhaps it will take years to change people's habits enduringly. But one sign that it will come in the next generation if not in this is the extraordinary receptiveness of the children themselves to the new ideas. Wherever the teams go, whenever

they address the steering committees, whenever a trainer visits a compound, a crowd of children always gathers. They listen, they do not speak in front of adult strangers, but they understand.

A new VBW in Isu, a young tailor called Francis Okoro draws attention to the role of the children: "All the local men's and women's groups are not yet convinced, they tell us we are wasting our time. But the boys and girls come and ask questions. They say to their parents: 'You should boil the water, you are doing a wrong thing,' and they try to persuade them." Ebere Okereke, a VBW in Umuka village, makes the same point (see the profile on the previous page).

In no society is behaviour so entrenched that it cannot change. Ideas come in, ideas like the "good news about water and sanitation," and if they are good ideas, they take root. It is like the pieces of seed yam now being planted in the newly dug mounds in Ibo land: some yield, others do not, but if enough pieces are put in the mound, some kind of harvest is assured. The Imo State Water and Sanitation Project is a landmark project, and within the multiple components of its design, so carefully evolved and evolving, is the promise of a major impact on the health and welfare of all the rural Nigerian children it has touched and it has yet to touch. □

The project structure

The Imo State Water and Sanitation Project was launched in late 1981 by the Federal Government of Nigeria with assistance from UNICEF, as a response to the challenge of the International Water Supply and Sanitation Decade 1981-90. The project covers two Local Government Areas (LGAs) in the state, in Urua Local Government Area, was extended to Owerri LGA in the second half of 1982 and will move to Afikpo LGA during 1983.

A further seven LGAs in Imo State are to be provided with water supply within the next five years. The project has received strong support from local leaders and the community. The project is a joint venture between the Federal Government, the State Government, and the local community. The project is a joint venture between the Federal Government, the State Government, and the local community. The project is a joint venture between the Federal Government, the State Government, and the local community.

report. Its State committee, co-chaired by the Ministry of Community Development and Co-operatives, are represented on the State steering committee. Health, Economic Development, Public Utilities, Agriculture, and Local Government. Between them they have agreed to the project since late 1981, including health education, training, social mobilization, hygiene and other.

The State Government has contributed N20,000 (US\$4,000) towards the project. The Federal Government has contributed N20,000 (US\$4,000) towards the project. The Federal Government has contributed N20,000 (US\$4,000) towards the project.

In Urua and Owerri the project is being implemented by the State as a model, and there are other signs that the Imo State model will be adopted as a national model. The key to extending the success of rural development programmes is much greater numbers of people in the village of workers that are replicable. Replicable programmes are a prerequisite for the success of the project.

The project is a joint venture between the Federal Government, the State Government, and the local community. The project is a joint venture between the Federal Government, the State Government, and the local community.

Is the water's colour important?

Bokaga is the host village for the first training programme for Cameroonian village leaders in handpump maintenance and preventive health. The 18 participants dig ditches, put up fences around the well, learn how to dismantle the pump head, and ask questions like: "Is the water's colour important?" By ANNE-MARIE GAUDRAS.



It is 5:30 a.m., on All Saints' Day, the eve of the day on which Christians commemorate the dead. Some 30 of the faithful brave the sharp morning mist and straggle into the church at Bafia to the peal of its bell. Around an altar set amid sturdy banana trees, each comes to offer his own prayer: a mother for a child, a local chief for his community.

That same morning, about 15 miles away, at the end of a track spectacularly furrowed by the rains, some 30 Cameroonians have gathered around the Bokaga wells. Each has come with his own hope: a father for his child, a "village leader" for his community.

They have come to attend a training

Around 30 village leaders have gathered in Bokaga for a training programme in maintenance and repair of handpumps. Photo: Gaudras

seminar. The Deputy Prefect of Bokito* district, in the Department of Mbam, formally inaugurates the training programme for "village leaders"—leaders designated by their villages and endorsed by the competent government bodies. The programme's aim is to enable the users themselves to maintain and repair the handpumps installed on the wells of 20 villages of Mbam, one of the least developed departments in southern Cameroon. An even more important aim is to impart an understanding of everything

*Bokito is the "twin village" of the Canadian town of Granby, which contributed 10,000 Canadian dollars to get the Village Water Resources programme underway.

that ensures a steady supply of good water, one of the pillars of good health.

The new handpump is much used in the early morning by school children, and at dusk by mothers and daughters. Learning to carry water is a hard lesson and is learned early. This evening, a two-year-old girl is quarrelling with her five-year-old sister, who manages to make her carry home unwillingly a milk-can full of water. True tradition actually says that only the mother should go to the well, as the youngsters trouble the water with their lighthearted games.

In the framework of "National Prospects for the Year 2000" and the United Nations Water Decade, the Government of Cameroon has adopted the goal of one water supply point per 500 people by the year 1990. According to the available figures, only 30 per cent of Cameroon's population (5.5 million rural dwellers of a total 8 million) have the invaluable advantage of a nearby source of clean water suitable for all household uses. To reach the target, some 1000 water supply points a year will have to be developed. At present, the government budget for village water resources can afford only 400 to 500 a year. Outside financing, from the World Bank, USAID, CARE, the African Development Bank, Denmark, the United Kingdom, Belgium, and probably the Islamic Bank, should bring the 1990 target closer.

For its part, UNICEF has concluded an agreement for a total of \$623,000* embodying a more modest goal: developing 100 water points over a 30-month period in the country's South-Central Province, using health education to improve the living conditions of the children and mothers in five Departments (Mbam, Upper Sanaga, Nyong-Nfoumou, Ntyem, and Ocean).

It is in Yambetta and Bokaga villages, the first of a group of 22, that the programme

*The new commitment necessary to pursue and expand the programme from 1983 to 1985 is \$2,080,000.



is getting off the ground.

Around the well in Bokaga

"Appreciable and appreciated," are the words used in the inaugural speech. But the programme has run into delays. Some well-digging teams have dug only 15 to 20 metres a month, rather than the 30 expected. Under present economic circumstances, this increases the cost of wells per metre and reduces the rate of implementation.

From the training of the first teams of well-diggers at Yambetta, to the first maintenance and health education programme in the host village of Bokaga, UNICEF's concern has been to dig as many wells as possible, and to foster villagers' awareness of the importance of hygiene and sanitation. It goes without saying that effective co-operation from governmental services in the department must also be fostered.

Around the well in Bokaga—a village of 1000 people scattered over five or six kilometres—the dynamism and competence of the programme personnel, the enthusiasm of the young village chief, and the community spirit which has so far prevailed, are together making something happen.

The 18 village leaders attending the session are all farmers, living essentially from cocoa planting. This is the time of year when they harvest, dry and store their crop. They also produce plantains, ground-nuts, maize, and various roots. They all attended their village primary school for a few years, and several have considerable expertise of one kind or another.

All the leaders want to make their community independent in the management of their common water resource, pending the building of a water supply system to the home, which will happen quite soon in four of the villages. All the leaders have a declared yearly average income of between 30,000 and 60,000 CFA francs (US \$85-170), depending on how good the year has been, but they are all volunteers for this work and will remain so.

It is very late in the morning. Several times the trainees have gone to quench their thirst at the fount of fresh well water in the shade of a palm tree. All morning, in rotating groups of eight, they have been cutting branches and palm leaves to build a fence around the well, with palm-branch slats tied to fenceposts with palm-fibre cord. They have begun digging a drainage trough around the concrete slab to prevent seepage of rainwater: the rains here are always

heavy and pick up pathogenic pollutants on their way. Working in four-man shifts they have set about dismantling and reassembling the pump.

For two weeks, taking turns and dividing tasks, they will delve into the inner mysteries of the pump, the submerged piston with its valves and leather gasket, the cylinder and the connecting-rods. They will learn to apply tow to the pipe threads with a special glue—an operation which may seem simple but has to be learned. They will learn to dismantle and assemble the above-ground part of the pump: the casing, the chain, the spigot and the lever, using tools which will be given to each of them at the end of the course: a set of spanners, two pin-



The trainees learn to dismantle and assemble the above-ground part of the pump: casing, chain, spigot, and lever. Photo: Gaudras

spanners, a hammer, a needle-valve, a pipe clamp, a tin of Gebajoint glue, and tow. They will then be able to spot the cause of the breakdown and repair it, for they will also be given spare parts: leather, gaskets, bolts and bearings.

During the two hottest hours of the day, work comes to a halt. The *gounou* soil (also the name of the local language) produces particularly large and succulent fruit: avocados, bananas, grapefruit, oranges, mandarins, and papayas the size of two or three rugby balls. The energetic organizer of the volunteers is trying to convince people that it's better to consume these fruits

(papayas, disdained by the adults, are left for animals) than beer, palm wine, and cane liquor.

In the afternoon, the teams take turns around the pump, at times serious and concentrated, at times relaxing with the instructors. Toward the end of the day, everyone's feet, calves, arms and hands bear the marks of the *moutmout*, flying leeches belonging to the mosquito family, whose bite draws blood and causes swelling. The *tse tse* fly too is active in this region: one buzzes around the village chief, who chases it away with the blow of his straw hat.

"Administrative Thursday"

Throughout the length and breadth of Cameroon, Thursday is a boon for the training programme. "Administrative Thursday" is a day on which people are expected to devote their time to tasks of public or community interest. They clean the streets, work on houses, repair a length of roadway, or build a community centre—an all-purpose meeting place where villagers can go to be vaccinated, to learn how to make a new porridge, to sew, to discuss a weighty decision, or even to pray on Sundays. This Thursday has been set aside to help the trainees by clearing and leveling the earth around the well. So, one two dozen students completing their primary schooling at the Bokaga school will set their young arms to work on the task.

The work is done in record time, accompanied by dancing. Assembly-line style, large pails of earth are passed from hand to hand and disappear into the bush. Two village women have also brought their shovels and their energies. While the work proceeds the organizer and the village chief discuss the activities of the health and sanitation committee of Boyaba, a nearby village which also has a well.

In Boyaba fines are being imposed on villagers who, after three warnings, still refuse to understand that health must be earned. For a vagrant sheep or goat feeding on a neighbour's shoots of corn, the fine is 3000 francs (US \$8); for dirty pans or ladles, 3000 francs; for lack of a family latrine, 6000 francs.

The school children in Boyaba will be the first to use the dry latrine which UNICEF has installed as a demonstration at the back of the school recreation yard. This latrine, built of earth, brick or cement, has two or more chambers, depending on the number of users. When a chamber is full, it is sealed off, creating an anaerobic effect which





Points about the connection between water and health are reinforced. A pump is not enough. A clean pump area is also important. Photo: Libert

neutralizes germs. The fecal matter then converts to fertilizer, against which there are no taboos in this region. It is hoped that, in time, the children will persuade their parents to adopt the latrine. The children are not ignorant of hygiene. Questions on the "cause and prevention of malaria," for example, count for 10 points in class, while history and geography count for five.

Questions and answers

In the hall of the district agricultural co-operative, where villagers can buy farming supplies, such as machetes, spades, hoes, oil and transistor batteries, the trainees meet after the first week of "work in common and personal learning" to take stock of what has been done in the framework of the national policy of primary health services, of enhancing know-how. They exchange questions and answers, and express ideas and opinions.

These were some of their questions: "Is rainwater good to drink?" Answer: Yes, but not the first drops that fall. It must also be gathered in a clean receptacle and used within a reasonable time. "Can human water poison a well?" Answer: Since it is a tradition to bury the dead near the family house, it is necessary to keep some distance between the well and the house. "Is the colour of water important?" Answer: The rainy season always stirs up the shallow ground water in the region. But water, like yam,

is good for the human body whether it be white or yellow.

There are points to reinforce about the connection between water and health. It is not enough to have a well equipped with a pump to ensure health in the village. It is up to the users to organize themselves to see to its repair and maintenance and to keep the area clean. And water taken from the well must be carried in a receptacle that has been well cleaned, if only with sand, water, and a handful of freshly-cut grass, followed by rinsing. Preferably, water should be carried and stored in long-necked, closed gourds.

It is not enough to dig a drainage channel around the well slab and put up a fence to keep the animals from dirtying the area. The earth must be protected from erosion, and the base of the fence must be sealed off. How can this be done with the resources at hand? The villagers had an idea: by planting citronella on the mounds and filling the fence openings with sharp lemon-tree branches. They also discovered that the same type of fence could be very useful to protect young cacao plants and vegetable gardens from goats.

What are the advantages for the village of having a well equipped with a handpump? They are obvious to all. "Formerly, during the dry season, we would spend nights waiting for a drop of rain to fall." And dur-

ing every season the women, during their long treks for water, ran the risk of mortal snake-bites. Foolhardy youngsters no longer drown in traditional uncovered wells, as they used to. "Bilharzia, which used to plague us, is on its way out too."

The end of this first training course does not mean the end of technical and training activities. Competent teams will continue to visit the villages, give advice, check on water quality, and, if need be, have water samples analyzed in Yaoundé, the capital of Cameroon. And other training courses will follow.

There are doubts expressed as to the value of practical training courses, since it is not always easy to rally a community to volunteer its efforts toward a common goal whose long-term benefits are not immediately apparent to all. To such doubts, the village chief responds with pragmatism.

"In 1976, I was the first farmer in this department who went to learn animal draught farming and put it to use. I came back from my training course with a pair of oxen and set to work. My friends and neighbours (I was not yet chief) saw me and noted the results. One by one, they followed suit. Now, thanks to improved yields, we have even gone beyond the animal draught method. Our agricultural co-operative has a tractor which the farmers can rent to till their fields. So why shouldn't we expect the results of this training programme to be widely adopted too?" □

"Women must look clean"

The complexions of the women in Wau shine with health and elegance. In this water-scarce land, there are many time-honoured practices which keep the body clean and perfumed without recourse to bathing. MURIEL GLASGOW discovered what these women mean by "freshening" themselves, and argues that health educators need such insights before devising their campaigns.

Angelina Paul is an elegant southern Sudanese woman, belonging to the Jur tribe. She lives in Wau, the capital of Bahr el Ghazal Province. Like the other women of Wau, no matter what their tribal origins, Angelina takes great care of her appearance. "Women must look clean. The body must shine and look pretty," she says.

Pride in personal appearance, and time spent on making the most of it, is a universal human characteristic, by no means confined to women. Cleansing the body is a key ingredient, associated not only with appearance but with a sense of personal dignity and worth. Those involved in water supply programmes and in health education campaigns constantly stress the need for women to be able to bathe themselves and their children for reasons of health and personal hygiene. But for the women of Wau, as much as for the women of the western world with their cleansing creams and perfume bottles, consciousness of how they look and whether their bodies are attractively scented may be an even stronger motivation.

On the outskirts of Wau is a community handpump, where the women from the surrounding village of Nazareth come to fill their jerry cans with water. Their skin, a universally rich dark tone, literally shines in the hot sun, and the whiteness of their teeth is striking. One of the women who comes to the water point is Mary, a pretty young mother of two children.

Mary lives near the water point, and much of her day revolves around water in one way



The complexions of the women in Wau literally shine with health and elegance. They take great care of their appearance. Photo: Campbell

or another, as she and her friends explain. She has called together seven of her friends, and they sit talking outside her *tukul*, or house, perched on the few comfortable chairs she possesses, and a bed brought out to make more seating space. Their daily duties as housewives, wives and mothers take some time to describe.

In the early morning, when she awakes, a woman must first warm a bucket of water for her husband's bath. In Wau, although

this is one of the hottest and driest parts of Africa, the early morning temperature is cool. Then she heats water for his tea. After her husband has left to go to work, she cleans the *tukul* and the kitchen, feeds the children, and bathes.

Her next task is to go to market, and then she makes sure there is enough water in the house. If not, she must fetch some. Then she prepare *fatour* (breakfast), serving it to her husband and any friends he brings, usually between 9 and 10 a.m. She and the children eat afterwards, and then she cleans her plates and utensils. Before long it is time to prepare for lunch, served usually around 2 p.m. After lunch she rests for half an hour or so, and then fetches water again. When he returns home, her husband uses another bucket of water for his bath, which she prepares. The children are bathed after the dinner, and at the very end of the day she prepares to "freshen" herself.

This group of women, all close friends, are talking of delicate "women's matters," as Mary puts it. But they speak openly and are curious about the intimacies of other women's toilettes. It is the word "freshen," and what it means, which is the key. For this is the word used to denote all those personal habits connected with bodily beauty and attraction.

In the Sudan, water is a precious and scarce commodity. Relatively few women, and these almost exclusively inhabit the towns, are fortunate enough to live near a water point as Mary does. Over the years, women have developed habits that maximize on natural resources to keep themselves clean. In the villages the lack of water is more acute than in the towns. There, women depend much more on roots, plants and natural herbs. It is essential, according to Mary and her friends, for the husband to have a wife who takes good care of personal hygiene habits, and these women are all "obsessed" to a large extent with being clean.

Muriel Glasgow is a programme officer in UNICEF's Water and Environmental Sanitation Section.

For overall body cleansing, especially in the evening before going to bed, the women use *dilka*, a solution made of ground maize or grain, mixed with water, perfume—*surtia*—and sandalwood oil. The grain is put in a bowl and dried over the wood of two scented trees, *dorot* and *teleh*, found in the forest. The resulting mixture is used to cleanse the body by friction, to let the body shine and make the woman more attractive to her husband. Before application, the *dilka* is carefully mixed together. Gently, the woman rubs her body with the solution. The process takes about 30 minutes, after which the skin becomes smooth and shiny and very pleasing.

Not just beauty, but therapy too

Dilka is widely used by married women in urban and rural areas in both northern and southern Sudan, and in the South men are also massaged with *dilka* as a prelude to sexual intercourse. It is believed to be therapeutic, preventing scabies and pimples. Mary and her friends also believe that *dilka* helps to keep the bones strong, and eliminates rheumatic body pains and aches.

After the *dilka* comes the cleansing with smoke. The scented woods—*teleh* and *dorot*—which are easily found in the southern Sudan, together with sandalwood if the women can afford it, are mixed with perfume and burnt in a hole in the *tukul's* floor, near the kitchen. First, the wood is burnt to cleanse the house with smoke-filled incense. Then the women cover themselves with their long tent-line garments—*tobes*—and sit over the hole for about 15 minutes. In addition to cleansing and perfuming the body, this too is thought to deter rheumatic pains. Therapeutic or not, the effect is thoroughly pleasing and sensual.

In the villages, women use a highly-scented wood called *ablela* for "smoke," and they also make a special oil from the seed of the *lulu* fruit. *Lulu* oil is an important ingredient in cooking and is also used for conditioning the hair, which is washed with a sudsy solution made with yet another leaf, the *abuluak*. Babies are rubbed with *lulu* oil from birth to about six-months-old, and washed with hot water. This is believed to help the baby develop firm muscles and bones, and to make the child relaxed and contented.

Women who have recently given birth rub themselves with *lulu* oil and bathe with hot water mixed with a grass called *abrihan* and



Mary has called together some of her friends. They talk about delicate "women's matters," but they speak openly. ICEF 9387/Glasgow

various leaves to help expel the afterbirth. *Abrihan* is a grass used every evening for internal cleansing. It is mixed with warm water to give therapeutic benefits. Women sit over this solution and wash themselves if there is not enough water for bathing all over.

During menstruation, in the old days, women in the villages used a special leaf called *upat*, shaped like a heart, two at a time. Cloth was scarce and menstrual pads non-existent. The women would not leave the house for three days, and during this time no bath was taken as it was believed that bathing during the menstruation might wash out any unborn child the woman was destined to bear. Nowadays, more baths are taken, especially in the rainy season, and cloth is used, or where they can be afforded, menstrual napkins.

For whitening the teeth, boys and girls of all ages as well as men and women use *musuwak*. This special twig is from a tree which contains "medicine" to prevent cavities. It is rare in the villages to find people with toothache or tooth problems. Rubbing the teeth with the index finger and ground coal is another step in whitening process.

Mary and her friends say that white teeth set against black gums are a strong attraction to both men and women.

Often, traditional habits far removed from the conventional bathroom practices used in parts of the world where water flows plentifully from a tap, are seen as improper and unhealthy. But many of the practices developed over time by the women of the southern Sudan are far from harmful. Indeed, some of them are beneficial to health, and most are an imaginative response to the need to wash and to enhance the body's natural beauty in a part of the world where water is scarce or unavailable. Those who devise health education programmes need an insight into people's existing hygiene practices. The health educator needs to distinguish between those that are positive or neutral towards health, and those that are genuinely harmful. Only this latter category needs to be the target for change; the positive practices should be reinforced.

Time spent on her person is time that any woman values. Mary and her friends work hard all day, and their lives are not easy, their possessions few, their domestic aids non-existent, their "toiletries" unconventional. But they still find the time to take care of their bodies, even if they say they do it for their husbands. Self-care is part of dignity, and they wear their dignity superbly. □

The water is safe again

Last year's fighting in South Lebanon left many small towns and villages cut off from their clean water supply, forced to retreat to seasonal ponds and other contaminated or distant sources. But, with UNICEF assistance, the situation has rapidly improved. By NORA BOUSTANY.

Perched atop a hill overlooking the South Lebanese border, the small town of Khiam used to be known as a "model village." With the turmoil that beset this troubled nation in the mid-seventies, Khiam was burned down and pillaged by guerillas, as the hulls of charred houses testify to this very day.

Its inhabitants went northward in pursuit of safer havens, a criss-cross of convoys to Sidon, Nabatiyeh, Beirut, then back south again, depending on the fighting. In the meantime, the deserted village had become a training base for Israeli soldiers. This only served to enhance its air of ugliness, destruction and desolation. Water pipes were broken and riddled with holes from spent bullets, which cut off Khiam's main source of life and provenance of health: water.

Today, a trip through the softly rolling hills of South Lebanon is like a journey back in time past. Young girls giggle by the side of the narrow road winding up to Khiam and pick green corn husks, which they rub between their hands to eat what is known here as *freikeh*.

Upon entering the town, the extent of general devastation is striking. However, little by little, people are repairing parts of their homes. Fresh slabs of concrete and construction sites are visible everywhere. Around 10,000 people from Khiam's once dense population of 40,000 have streamed back to their homes in the last three months.

At the entrance to the town, three elderly people huddle on the porch of what has remained of their home. Further up the hill, women donning bright scarves devotedly tend to their small vegetable gardens.

Nora Boustany is a freelance writer based in Beirut.



When the war in southern Lebanon cut off the water supply last summer, villagers had to rely on stagnant ponds for washing and bathing. ICER 9388/Lippman

The way of life in Lebanese rural areas makes the general health of residents, particularly children, conditional on the amount and quality of the water supply.

According to Maj. Christina Arosenius, a Swedish veterinarian who has served in the UN forces (UNIFIL) in South Lebanon, there are serious threats posed to villagers' health by the inadequate usage and distribution of water in such far-flung areas. If water is far away, people tend to use much less of it. The Lebanese diet is vegetable- and grain-rich, consisting mainly of raw green salads such as *tabbouleh* or *fattouch*; stewed beans, courgettes, wild weeds and ochra stews with rice; stuffed vine leaves

and seasoned dips of grains and pulses such as lentil and chick peas. This kind of regimen requires very thorough washing of its ingredients. If water is distant people only use five to 15 litres per person a day; if water is within 50 yards, they use double this amount.

UNICEF has installed a four-inch eternite pipe to Khiam that comes all the way from a water source in Chebaa, which is drawn up to Marjeyoun and led down to Khiam and other towns and villages by gravity. In April alone, UNICEF laid six kilometres of pipes throughout the Khiam area.

Water everywhere

It is more than evident that Khiam is springing back to life in its vibrant market square. There is water everywhere on the narrow streets. Dozens of cars are being washed. At least four butcher shops are open, always a sign of budding prosperity in the impoverished townships of southern Lebanon, where villagers cultivate their land to survive.

Burly, moustached village men partake of their favourite outdoor meal: *lahm meshweh*, skewered beef and *tabbouleh*, a salad of finely chopped parsley, tomatoes, onions and crushed wheat, seasoned with olive oil, fresh lemon and salt. Others play tric-trac (backgammon) in a nearby storefront. Sweet shops with gleaming windows are back in business. White sheets and gay summer dresses flutter on the rooftops of neat but still unrepaired dwellings.

In excited voices local headmen think and plan aloud for a more densely populated town. There is more land to be irrigated, but will the water supply be enough? They air their grievances openly, complaining about the pace of progress.

As they talk, their wives fill water from standpipes hooked to the main line. A lot remains to be done. Local water authorities have promised to take care of the individual links from the mains to the various houses



and buildings.

Over eight years ago Khiam was an example of community self-help projects, handicraft centres and a well-organized village. With the return of water and electricity, it looks as though Khiam has started reclaiming its lost status as a model, slowly but surely.

Over half a million dollars are being spent by UNICEF on Khiam alone. Similar plans are in store for the neighbouring township of Ibel Al Saki, where a new water pump has been installed. Another US\$1 million is being spent on doubling the capacity of Ras El Ain pumping station and US\$1 million will be used to finance the building of a water treatment plant at Taybeh.

UNICEF is rehabilitating 200 wells in South Lebanon by building booster stations and treatment plants with adequate chlorination equipment to clear the water from contamination and pollution. Hospitals in Tibnin, Tyre and Marjeyoun have been repaired and supplied with water. Fifty wells have been revamped so far for usage, and UNICEF engineers are drilling more.

The recovery of South Lebanon is astounding. Driving through the many villages, the sight of children with smiling faces, dressed in their Sunday best, the purposeful gait of their mothers, and the multicoloured roses and anemones, make the human misery witnessed in these same places almost impossible to recall.

Last summer, dozens of cases of hepatitis and gastro-enteritis were seen in southern Lebanese hospitals. When the water supply was cut off, villagers tended to rely on stagnant and open ponds to wash, bathe, water and wash their animals and tractors even. Pathogenic bacteria survived and multiplied in the contaminated water. Such water used for irrigation of vegetables and fruit or in cooking brought great danger of infection.

Reinstallation of Ras El Ain

Following incessant aerial bombing of the Ras El Ain pumping station during the Israeli invasion last year, 107 villages lost their safe water supply. The pump was levelled, literally reduced to a heap of pipes.

Fortunately the source of water, a perennial spring dating back to biblical times, was not hit, though a cluster of at least nine bombs barely missed it. A modern treatment plant was also flattened during the raids. The power line and transformer were also destroyed.

In the old days, the system of water distribution led to contamination, according



Repairs and rehabilitation to the pumping station at Ras El Ain were undertaken at UNICEF's expense. Safe water is restored to 200,000 people. ICEF 9389/Lippman

to Maj. Arosenius. The ponds in many villages filled up in the rainy season, but they were far from hygienic. Open ducts or canals from fresh water wells were fertile ground for bacteria, particularly as animals drank and walked in them.

The loss of Ras El Ain deprived some 200,000 people from safe and treated water. UNICEF—the only agency active in the area—had to grapple with the dual problem of sending its staff to still dangerous areas, and to take immediate measures to prevent health hazards resulting from water deprivation. The most ambitious forecast for the rebuilding of the pumping station, the replacement of ten pumpsets, transformers and chlorinators was estimated at 12 months.

Under the treatment plant floor is a large reservoir which could be fed from the spring. Holes were drilled in the floor to enable new pumps to get to the water in the reservoir. At UNICEF's expense, the power authority was co-operative in providing a new transformer which was installed in the repaired plant operations quarters. The newly installed pumps were then connected up, and pumping was resumed.

The water from the Ras El Ain pumping station is delivered by three pipelines to the coastal area, to an intermediate level reservoir at Hannaway and lastly to the Siddiqin reservoir from which water is taken by the Siddiqin booster pumping station and fed high to areas above the coastal plain. UNICEF's achievements in the face of wartime conditions, irregular power cuts and other difficulties, have done much to reassure the people of South Lebanon that, once again, their water supply is safe in every sense. □



They don't understand the connection

Thousands of village teams in Wanging'ombe have dug trenches, laid pipes and cleared bush to bring water to standpipes near their homes. Now they have started to build latrines, "to prevent diseases," they say. But they don't understand how or why this will happen. By LINDSEY HILSUM.



The Wanging'ombe water project in south-eastern Tanzania has been an undoubted success. The new water supply system that taps the Mbukwa river and pipes water to 43 villages in an arid stretch of Tanzania's countryside has transformed the lives of the 80,000 people it serves. In 1980, when all the traditional water sources—wells, shallow pools and water holes—had either dried up or were depleting fast, the Mbukwa water continued to flow.

The people's enthusiasm for the new system was a key to its successful installation.

Lindsey Hilsum is a Programme Associate in UNICEF's Nairobi office.

Teams of villagers gave their labour voluntarily to dig trenches and carry pipes to places which could not be reached by truck. Photo: UNDP/Wolff

Ivan Blakely, UNICEF Project Officer, who has lived in Wanging'ombe advising and observing since 1977, says: "This huge gravity water project owes its success entirely to the efforts of the 80,000 villagers which it serves and three small teams of technicians." Countless teams of villagers, organized by their village chairmen, gave their labour voluntarily to dig the trenches, carry the pipes to places which could not be reached by truck, lay the pipes, clear the

bush, and prepare aggregate for constructing the village storage tanks.

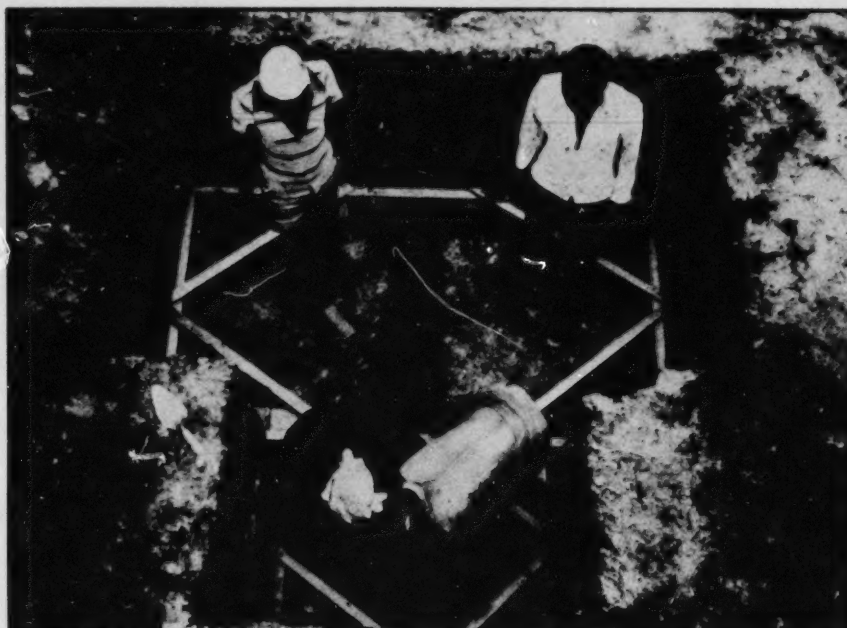
Women in the villages of Wanging'ombe cite convenience as a major advantage of the new supply. They used to walk up to seven kilometres to fetch their water. By the end of 1983, domestic drawing points will have been established in all the villages, meeting the Tanzanian government target that no-one should have to walk further than 400 metres to collect their water.

If convenience has been the obvious gain as far as the villagers themselves are concerned, local health officials also believe that the Mbukwa water has had some impact on people's health. Dr. Maric George Mvungi, of the Ilembula Lutheran Hospital in the centre of the project area, says that the provision of a permanent water supply to the hospital and other local health facilities has improved their standard of care. In addition: "There used to be a lot of scabies around here. Since we got the water, there have been fewer patients coming to the hospital with scabies."

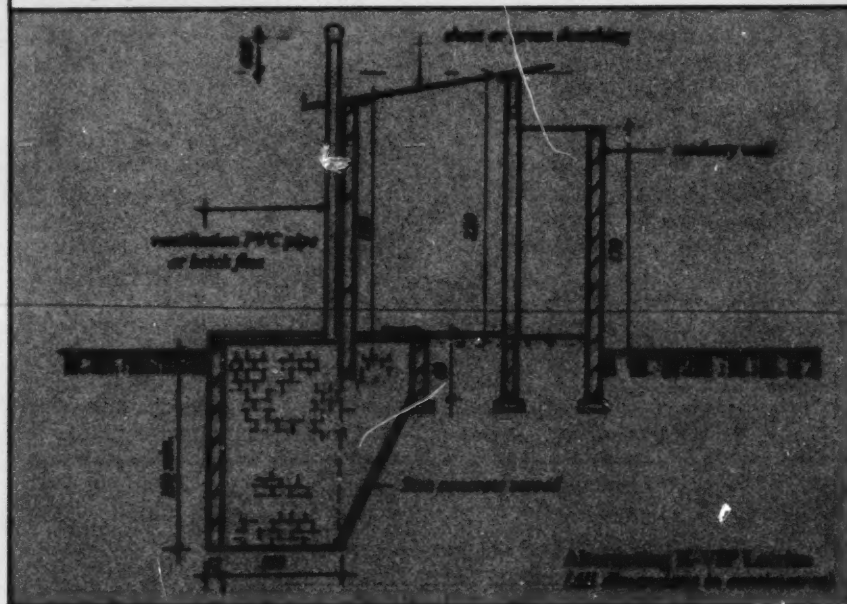
The reduction in scabies suggests that people are using more water—washing more often and improving their personal hygiene. However, the waterborne diseases which account for over half of all patient visits to the hospital, and are a major cause of death in the area, have not been eradicated, although Dr. Mvungi thinks their incidence has dropped.

One reason that the water supply has not made an immediate and dramatic impact on health is that the filtration system is not yet complete, so the water is still "raw" when it reaches the villages. Two of the treatment cells prepared for the filtration system are being used as sedimentation tanks, so the water is cleaner than the water in the streams and pools traditionally used, but is still not pure. And all the exhortations and explanations in the world will never persuade people to boil water regularly when fuel is scarce and expensive.





Sanitation is now being introduced in Wanging'ombe, using the Ventilated Improved Pit (VIP) Latrine, which consists of a double alternating pit and a privy shelter. Villagers make the bricks, and do all the construction work on a self-help basis. UNICEF supplies two bags of cement to each village household. Photo: Hilsum.



Sanitation would make a difference

Another problem is that many of the waterborne diseases prevalent in the region such as hookworm and diarrhoea are of fecal origin. Without good sanitation, the water supply project can only have a minimal impact on health.

With this in mind, three years ago local

leaders and visiting technicians decided to suggest to four villages a pilot scheme for constructing improved pit latrines. Accustomed to living at close quarters, the people of Wanging'ombe already had latrines in their houses or nearby. But they were not safe as flies could easily hop from latrine to kitchen. Neither were they secure: the bush holes used as squatting plates were often eaten away by termites and the pit walls

caved in when it rained. Children and old people were often afraid to use the latrines so they used the fields.

After an initial hitch in the choice of latrine design, a project to provide villagers with permanent latrines was launched. As with the water supply, everything is being done on a self-help basis. The Ventilated Improved Latrines — known as VIP latrines — consist of a double alternating pit and a privy shelter constructed of locally-made burnt bricks and imported cement. The double alternating pit (when one pit is full, the other is used; and when that is full the first one is emptied and used again) means that the latrine can be used permanently. The villagers make the bricks themselves and UNICEF supplies each household with two bags of cement. UNICEF is also supporting the manufacture of cement squatting plates locally. So far 500 improved latrines have been constructed towards an ambitious target of 20,000 by 1985.

As yet it is hard to judge if the latrines have had any significant impact on health. Many people who have had an improved latrine for over a year think that their children suffer from diarrhoea less often, but this is only an impression: there is no scientific proof. In the end, however, it will be people's impressions that count, for they must themselves be persuaded of the latrine's health benefits.

At the moment, when questioned about the reason for building an improved latrine, most people reply: "to prevent diseases," but cannot explain how or why the latrine will do this. Dr. Mvungi believes that the latrine programme will only have a significant effect once people understand about flies and fecal contamination. "It is no use someone building a good latrine if he is not taught how and why to use it." It's the same with water: people need to understand the connection between drinking water and disease before they appreciate clean drinking water's advantages. Christopher Mgwaeje, Divisional Secretary for Wanging'ombe, agrees: "Once we have built latrines in every house, or maybe before, the major thing we have to do — and we have already started — is health education."

When the water supply project was underway, UNICEF project officer Ivan Blakely commented: "Once a village is committed, there is no turning back." Building the water supply was the first step. Now they are committed, the next step will be an education campaign to help them make the best use possible of the water supply and latrines they have constructed. □

DEVELOPMENT EDUCATION

CARE TO JOIN US?

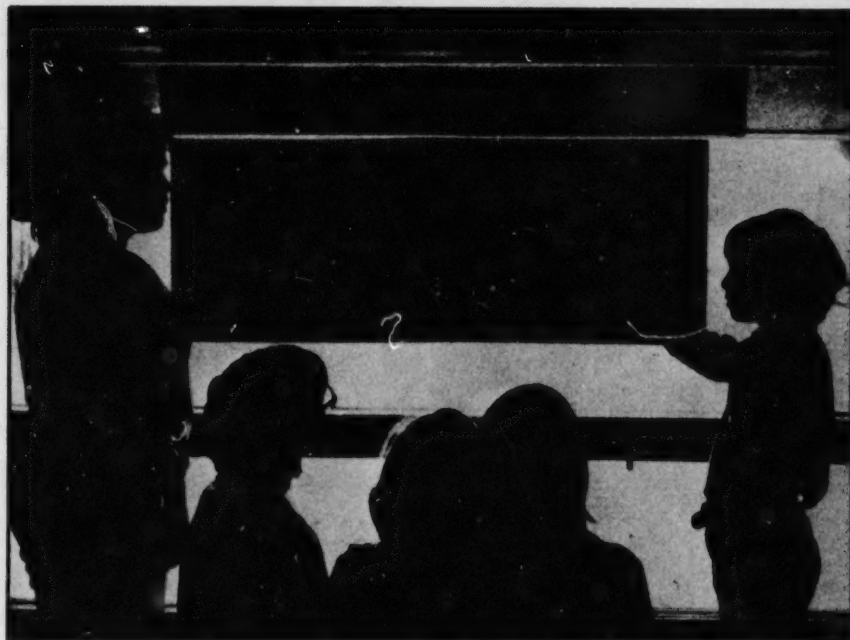


Watching waste

Lunchtime at the Weybridge elementary school in Vermont, USA, is organized in an unusual way. The 78 school children are served family style, and each takes only as much food as he or she can eat. At the end of the meal, plates are scraped carefully and the leftovers weighed. On every day that the total waste weighs less than one lb, the "Waste Watch" target has been met, and sponsors from the Weybridge area pay a contribution to UNICEF. By the time the school closed for summer break, \$1,101 had been raised, enough to buy 1,101 lbs of the supplementary food K-Mix II, for children in the Third World whose daily plateful is seriously lacking.

The "Waste Watch" idea was dreamt up by Caroline Donnan, a third grade teacher. "It upset me to see so much food wasted at school mealtimes. I remembered my mother's old saw: 'Eat your peas, the children in China are starving'. It didn't make much impression on me, it didn't mean anything," Caroline, with the aid of the school principal, decided to try something which would make a lasting impression on the youngsters.

During 1982, a year-long focus on nutrition at Weybridge included everything from classroom study on food preparation, discussion of food-related expressions, like "cool as a cucumber,"



talks and filmstrips. It was part of an attempt to help children see that what they ate came from a global plateful.

At New Year, the children passed a "Waste Watch Resolution" not to waste food at mealtimes. A challenge was published in the local newspapers for sponsors to come forward. Each agreed to pay 10 cents or so to UNICEF every day that the Waste Watch target was reached. The children kept a graph of their daily leftovers, and contacted the sponsors at the end of each month to give the tally of successful days. "It only took for one kid to fail regularly to drink his milk, and we'd never have made it," said Caroline. But all the kids joined in. "It was a real community effort."

Although raising money was important to the Weybridge pupils, who put up a cut-out paper doll on the school wall for every pound of supplementary food their efforts bought, it was not at the forefront

of Caroline Donnan's goals. "I didn't spend my time on a sales pitch for contributors—each one contacted us voluntarily. If we had gone all out for money, we could have been raising hundreds more dollars," she says. "My intentions were mainly educational. I wanted to help the children think differently, to see themselves as members of an interdependent world, in which something they did could make a difference to others."

Caroline made sure that every aspect of Waste Watch provided an educational chance of some kind, to practise drawing graphs, weighing, writing letters to sponsors, talking to the newspaper people that Waste Watch brought to Weybridge. When people began to write from all over the country, Caroline began to see her goals fulfilled. "The dolls on the walls, the feeling of achievement, really fired the children up," she says.



DEVELOPMENT EDUCATION

"But when they saw what interest they had inspired among people in places they had never heard of, they felt so proud. They began to think about a lot of things differently. I think many have developed a new value system, which will stay with them throughout their lives." □

Further information from the US Committee for UNICEF.

TURN TO
THIS
SCRAP
BOOK



A day in the life...

The annual school project of New Zealand's Kapiti Coast UNICEF branch, timed to coincide with Universal Children's Day, was on "The World's Homeless Children."

Among the many entries were models, drawings, stories, poems, and illustrations. Book tokens were given as prizes to two school libraries, and there were a number of individual prize winners.

Here is a selection of the best entries from Raumati School.

"Needs of a refugee"

(Nathan Millar)

This is a list of things you might have to take if you were suddenly forced out of your home into the street and had nowhere to go. The three main things you would need are:

Shelter: small tent or something to protect you from the wind and the rain.

Food: to keep you well nourished and healthy.

Clothing: to keep warm so you don't suffer from exposure.

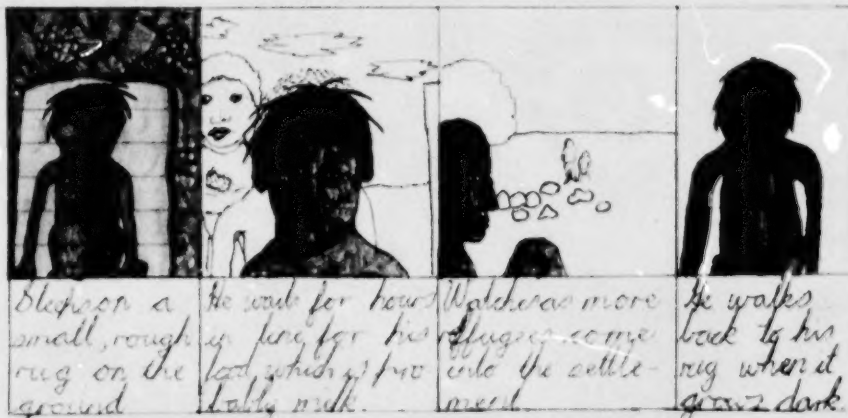
Other things you might need: sleeping bag, radio, matches, torch, batteries, waterproof coat, watch, water and container, money, some form of transport, powdered milk, knife, personal possessions.

Most of these, refugees have not got. All they have out of this list would be: knife, some water, a small amount of money, a little clothing, a little food, and a few personal possessions.

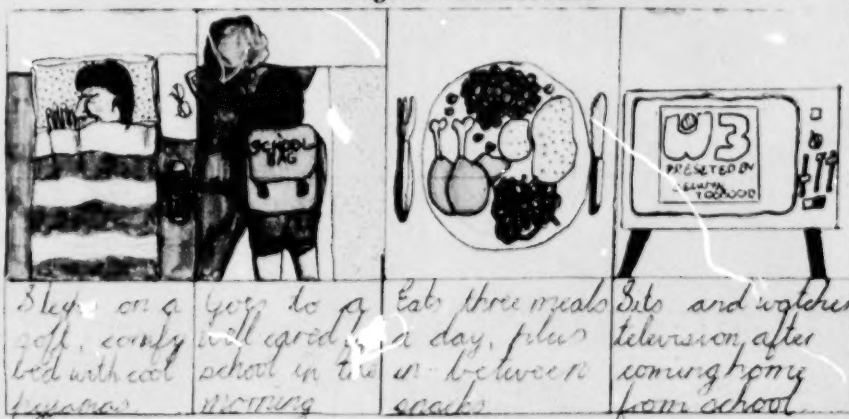
The two days

Many children made a comparison, by pictures and captions, of a normal day in their lives compared to that of a refugee child. Paul Mundy and Paul Drydew had this version:

A day in the life of a homeless child



...of an average New Zealand child



Poems:

Memoirs of a homeless child

P. Mundy

No rations came again tonight,
Nor will they come tomorrow
For they bombed our peaceful camp
again

Causing pain and death and sorrow

My stomach bulges, all over I hurt,
They call it malnutrition,
It started when the Ethiopians came,
To start their demolition.

No night do I sleep a wink,
And I am so tired in the day,
I hardly have the strength to stand in
line,

And wait for food or run or play.

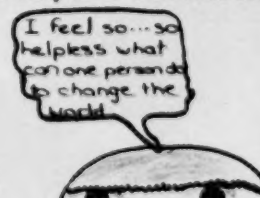
So now I lie on my mat,
With closed eyes and set chin,
Waiting for light to shine,
On a life not worth living in.

War

By Paul Drydew

Why us? Why our beloved land?
How come the enemy want our land?
In the midst of the fighting
Our homes are being destroyed.
Our lives and families are being ruined
By the ruthless brutes.
Hopefully our past will be forgotten
But now our minds are on the present
Homeless, wandering, starving.

At the end of one illustrated project book by Mark Olley came a sad little cartoon:



Perhaps that will be the classroom project for next year. □

FURTHER INFORMATION ABOUT UNICEF AND ITS WORK MAY BE OBTAINED FROM:

UNICEF Headquarters
United Nations, New York 10017

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Palais des Nations, CH 1211, Geneva 10,
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P.O. Box 44145, Nairobi, Kenya

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UNICEF Regional Office for the Americas
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P.O. Box 2-154, Bangkok, Thailand

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P.O. Box 5902, Beirut, Lebanon

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B-1040 Brussels

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c/o Ministry of Public Health
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BG-Sofia

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CH-8021 Zürich 1

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Escalier B-Bureau 151
TN-Tunis

Turkey: Turkish National Committee for UNICEF
Abdullah Cevdet Sok. 22/10
TR-Ankara

United Kingdom: United Kingdom Committee for UNICEF
55 Lincoln's Inn Fields
GB-London WC2A 3NB

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331 East 38th Street
USA-New York, N.Y. 10016

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U.S.S.R.: Alliance of Red Cross and Red Crescent Societies/sojuz Obshchestv Krasnogo Kresta i Krasnogo Polumesiatstva 1,
Cheremushkinskii Proezd, 5
SU-Moscow 117036